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The OIL AND GAS JOURNAL

DECEMBER 11
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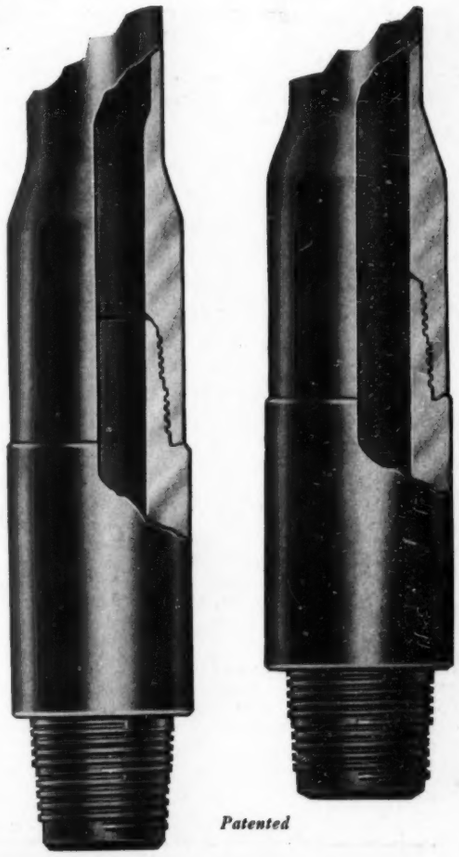

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1. TOP PHOTO: General view of Lake Charles Refinery.

2. BELOW: Nordco Steel Valves on gasoline storage tank lines.

3. AT LEFT: Nordstrom Valves on manifold of gasoline lines.

4. BELOW: Nordstrom Valves on treating tanks.

Continental's new thermal polymerization refinery at Lake Charles, completed at a cost of $4,000,000, gives national defense another boost with production of 100-octane gasoline. It's the last word in modern equipment. This refinery is equipped with Lubricated Plug Valves for practically every major valve operation throughout the plant, to assure safety, ease of control, assurance against sticking, and protection from corrosion and erosion.

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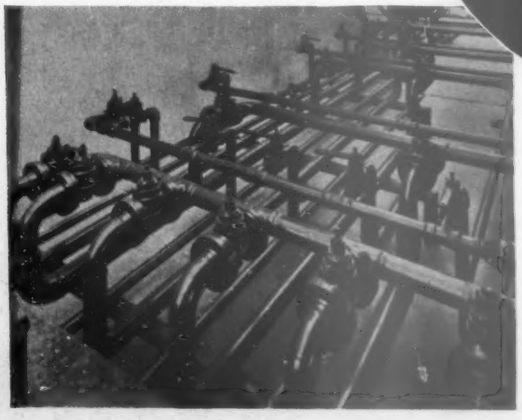
5. BELOW: Finished products manifold controlled with EMCO-Nordstrom Valves.



6. BELOW: Loading and transfer lines equipped with Nordstrom Valves.

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Table of Contents

Vol. 40, No. 31 — December 11, 1941

News Developments

Trends: War Economy Will Bring Adjustments in Industry's Plans ... 21
Meager Japanese Oil Supply May Be Incentive for War ... *H. Stanley Norman* 22
Pipe-Line Operators Plan for Increased Needs ... *Paul Reed* 24
This Week ... 26
Defense Council Holds Initial Conference ... *Henry D. Ralph* 27
News From the State Capitals ... 28
Editorial: Keep Prepared ... 29
Major-Field Need Demands Outpost-Area Exploration ... *W. V. Howard* 30
Priorities: Preference Order P-83 Simplifies Procurement of Materials ... 31
Effect of Defense Activity Is Chief Topic at Power Meeting ... *D. H. Stormont* 32
East Texas Operators to Consider Disposal Plan ... *D. H. Stormont* 34
Federal Policing Not Wanted, California Operators Told ... *L. P. Stockman* 36
New Tax Provisions Discussed at Mid-Continent Meeting ... 39
Refinery Expansion ... 41
Natural-Gas News ... 41
Natural-Gasoline News ... 41
Deaths ... 42
The Markets ... 42
Calendar of Events ... 42
Pipe-Line Activity ... 67

Engineering—Operating

Plantation Line Demonstrates Construction Efficiency ... *Paul Reed* 44
Pump Used With Cable-Tool Completions ... 46
Loco Hills Pressure-Maintenance Project Placed in Operation ... *D. H. Stormont* 48
Sulfur Limits in Gasoline ... *C. D. Lowry, Jr., and Gustav Egloff* 52
Mechanism of Flow of Fluids Through Orifices ... *J. T. Cortelyou* 56
Questions on Technology ... *By W. L. Nelson* 64
Operating Ideas ... 65
Refinery Ideas That Save $ $ $ ... 66

Field Developments

Field Developments ... 69
Illinois ... 70
Permian Basin, Panhandle ... *Tom Barber* 72
Kansas, Nebraska ... *Robert Ingram* 75
North Central Texas ... *D. H. Stormont* 76
Louisiana Gulf Coast ... *F. L. Singleton* 79
Oklahoma ... *Robert Ingram* 80
California ... *L. P. Stockman* 81
Rocky Mountain Area ... *T. R. Ingram* 83
Indiana, Ohio, Kentucky ... 84
Eastern Texas ... *D. H. Stormont* 87
N. Louisiana, Arkansas ... *R. Marne Sanford* 89
Among Drilling Contractors ... 90
Texas Gulf Coast ... *Neil Williams* 92
Southwest Texas ... *F. L. Singleton* 93
Canada ... *Victor Lauriston* 94
Michigan ... *Otto C. Pressprich* 95
Appalachian Fields ... 96
Mississippi ... *R. Marne Sanford* 97

Markets and Prices

Crude-Oil Prices ... 100-101
Group 3 Market ... *H. Stanley Norman* 104
New York Market ... *J. P. O'Donnell* 105
A.P.I. Refinery Prices ... 105
Tank-Wagon Market ... 106
Refinery Prices ... 107

Additional Features

Personal Paragraphs ... 102-103
Equipment News ... 108
Classified Advertising ... 110-111
Advertisers Index ... 112

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CEMENT WASH-DOWN WHIRLER EQUIPMENT

3 POSITIVE, LEAK-PROOF BACK PRESSURE VALVE. The buoyant Plastic BALL-TYPE Back Pressure Valve floats in the cement slurry or rotary mud and instantly forms a leak-proof double seal against a narrow, tough rubber ring (backed by Plastic and concrete) at the slightest reversal of pressure. Here is valve efficiency at its best.

5 BAFFLED WHIRLER PORTS. These whirler ports provide the important wash-down whirler action so advantageous in circulating or cement operations. When the fluid strikes the baffled ports, a downward and then an upward whirling action results. In running-in, this efficient whirling action provides the means of disintegrating and effectively washing away bridges. In cementing, the fluid preceding the slurry (and then the slurry) washes the formation and properly prepares the hole to receive the cement, assuring a better bond between the cement and the formation. During cementing, the whirling action imparted to the slurry assures best possible distribution of a uniform body of cement entirely around the shoe and the shoe joint, reducing hazard of channeling to a minimum.

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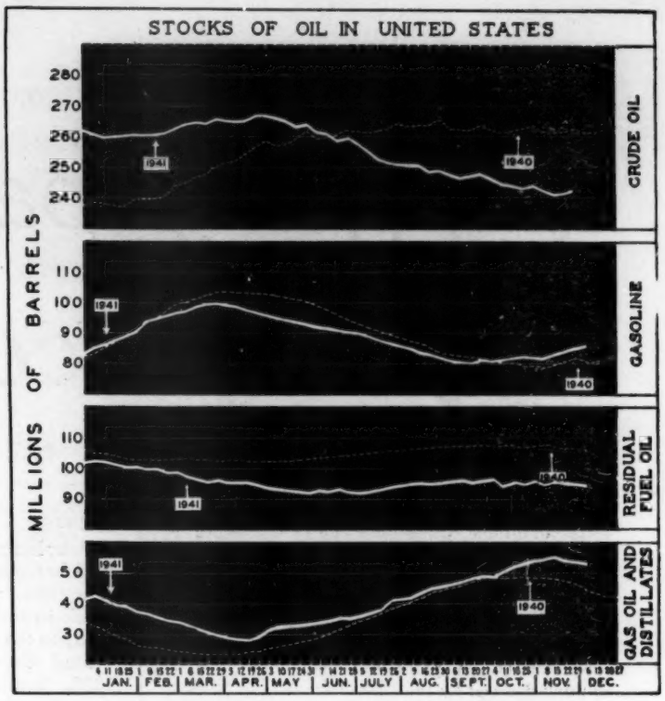
Trends

War Economy Will Bring Adjustments In Industry's Plans



ALL operating divisions of the petroleum industry are endeavoring to project their operations on the basis of a war economy. While changes have been necessary in recent months in adjusting operations in line with conditions created by the national emergency, it is agreed that the war with Japan and the possible immediate spread to other areas, will bring new developments in governmental requirements with innovations in procedure which will be initiated by the industry itself.

CRUDE PRODUCTION *4,103,715 bbl. daily average—up 18,145 bbl. One year ago 3,602,000 bbl.*

CRUDE STOCKS *242,884,000 bbl. as of November 29—up 928,000 bbl. One year ago 262,679,000 bbl.*

GASOLINE STOCKS **86,356,000 bbl. as of December 6—up 831,000 bbl. One year ago 80,306,000 bbl.*

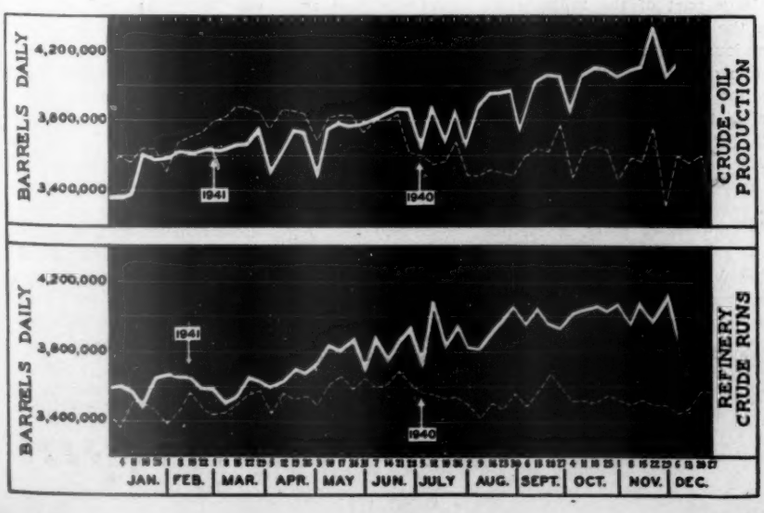
RESIDUAL FUEL-OIL STOCKS *95,342,000 bbl. as of December 6—down 629,000 bbl. One year ago 104,094,000 bbl.*

GAS OIL AND DISTILLATES *53,946,000 bbl. as of December 6—down 195,000 bbl. One year ago 46,030,000 bbl.*

REFINERY RUNS *3,945,000 bbl. daily week ended December 6—down 170,000 bbl. One year ago 3,460,000 bbl.*

*Includes 7,293,000 bbl. aviation motor fuel, down 164,000 bbl. One year ago 6,324,000 bbl.

The fact that the war started on the day that the new Petroleum Industry Council for National Defense held its initial meeting in Washington afforded an opportunity for the industry's representatives to be advised immediately of any special needs of the Government in its role of a belligerent. Reports indicate that the first major problem to be solved will be concerned with trebling the refining industry's production of 100-octane aviation gasoline. The petroleum coordinator asked several weeks ago that plans be initiated to enlarge the output to 120,000 bbl. daily and now that figure is being increased with all new plants to be on stream before the end of 1942. There have been delays in getting parts of the large construction program under way with some disagreement among refinery operators and government representatives as to the best plan to follow. It has been indicated that the stalemate will be ended this week at Washington with whatever action is necessary to make the fuels available to this country's military units and those of the Allies as needed. This probably will require substantial additions to cracking facilities at several refineries in order that operators will have the larger supplies of the gases required in the manufacture of the high-octane material. It may also bring changes in crude production in order that refiners will have available those crudes from which the war fuels can most easily be obtained.



DAILY AVERAGE PRODUCTION FOR WEEK

	Dec. 6, 1941	Bur. Mines Dec. est. of demand	December state allowables	Nov. 29, 1941
Arkansas	73,965	76,500	75,309	74,070
California	643,750	635,800	613,200	641,500
Eastern fields	113,350	116,600	.....	113,250
Illinois	399,500	426,500	.....	398,600
Kansas	240,700	260,700	264,000	249,200
Louisiana	359,735	340,000	354,795	348,425
North Louisiana	*81,485*	.....	.....	*81,575*
Louisiana Gulf Coast	*278,250*	.....	.....	*266,850*
Michigan	53,120	52,300	60,000	56,960
Mississippi	74,655	60,300	.....	71,395
Nebraska	5,900	6,100	.....	6,550
New Mexico	117,680	116,100	117,000	117,670
Oklahoma	418,250	460,000	428,000	425,250
Rocky Mountain states	110,960	108,400	.....	110,050
Texas	1,492,150	1,479,700	1,555,192	1,472,650
East Texas	*369,300*	.....	.....	*369,500*
West Texas	*289,300*	.....	.....	*286,500*
North Central Texas	*139,050*	.....	.....	*138,090*
East Central Texas	*86,650*	.....	.....	*86,100*
Texas Panhandle	*99,150*	.....	.....	*85,100*
Texas Gulf Coast	*414,000*	.....	.....	*412,950*
Southwest Texas	*94,700*	.....	.....	*94,500*
Total United States	4,103,715	4,139,000	.....	4,085,570
Total production, Jan. 1-Dec. 6, 1941		1,294,585,300 bbl.		
Same period last year		1,254,238,110 bbl.		

It is also believed that the war will bring prompt decisions in other matters pending at the nation's capital for several weeks including the completion of organization matters affecting Washington agencies and district offices. The start of the war will not have immediate importance in the industry's operations generally. Oil shipments to Japan, the West Coast's largest customer, were shut off in July and California operations were adjusted to that situation at that time. California refiners are prepared to supply any increased requirements coming from greater military activity in the Pacific.

A successful attack by Japan on the East Indies with that country in control of that part of the Pacific would increase petroleum requirements from California.

Meager Japanese Oil Supply May Be Incentive For War

By H. STANLEY NORMAN

SEVERANCE of the petroleum supply lines, one of the economic sanctions imposed on Japan in an effort to halt or minimize its Asiatic territorial ambitions, while only one of the issues, is high among incentives that led to attack this week on the United States, British, and Netherlands' possessions in the South Pacific.

There are no reliable estimates available on the amount of petroleum Japan had stored prior to the embargo on petroleum shipments to that country decreed by the United States and Netherlands governments last July. Private oil companies, however, were asked to maintain at least 6 months' requirements in storage at all times. The Japanese Government's petroleum-storage program always has been a carefully guarded secret but there is reason to believe that fuel stocks for military forces were maintained at a substantially higher level than asked of private companies.

However, Japan has received diminishing quantities of petroleum since imports from the United States reached a peak of 32,079,000 bbl. in 1938. Shipments from the United States dwindled from the 1938 peak of about 88,000 bbl. per day to around 46,500 bbl. daily in the first 4 months of 1941. Petroleum exports from this country ceased completely on July 26 and 5 days later, the Netherlands East Indies authorities abrogated a contract with Japan which was written in November 1940, providing for delivery of 12,500,000 bbl. a year.

Drastic curtailment of civilian consumption has been effective in Japan since start of the war against China. It remains, however, that Japan has had access to no substantial supply of petroleum since the end of last July, a period of nearly 4½ months during which consumption has continued without material change.

Civilian Consumption Curtailed

Civilian consumption of petroleum in Japan in 1940 according to estimates of V. R. Garfias, R. V. Whetsel, and J. W. Ristori of the Cities Service Oil Co., totaled 26,000,000 bbl. This total is approximately the same as the estimates for 1939 and 1938 but less than the 34,100,000-bbl. figure for 1937, the year which marked the start of the invasion of China. Since that time it has been the policy of the Japanese Government to discourage the civilian use of petroleum as much as possible in order to conserve supplies for military operations. This year further restrictions were made effective so that the consumption of petroleum at this time is practically confined to the military branches and civilian activities which contribute directly to the war program.

It is estimated that Japan's military operations require 14,900,000 bbl. annually making a total consumption for the country of 40,000,000 bbl. annually, or about 110,000 bbl. daily. The petroleum demands of each of several states in the United States exceeds this figure with petroleum consumption in New York State alone at this time averaging in excess of 400,000 bbl. daily.

Of the 26,000,000-bbl. civilian consumption in 1940, 8,000,000 bbl. is accounted for by gasoline and 12,000,000 bbl. by fuel oil. The fuel oil is largely used by Japanese industries as fuel and there has also been an increasing demand for diesel oil as fuel for industrial, agricultural, and marine power. A large part of the military demand comes from the oil-burning units of the Japanese Navy. Previous to the embargo on shipments Japan was one of the largest export buyers of aviation gasoline in the United States.

Subsidiary and affiliated interests of the Standard Vacuum Oil Co. (Standard Oil Co. [New Jersey] and Socony-Vacuum Oil Co., Inc.) and the Royal Dutch-Shell have been the largest suppliers and distributors of petroleum products in Japan. A large part of the supplies of these companies has come from their fields and refineries in the Netherlands East Indies. They have also imported both crude oil and refined products from the United States. The Nippon Oil Co. is the largest of the Japanese-owned oil companies. The company is producer, refiner, and distributor in Japan and is also a large importer. The government has exercised control over prices for petroleum products and for several years gasoline quotations were the lowest in the Eastern Hemisphere, comparing favorably with market levels in the United States.

Inventories Built Over Decade

Starting nearly a decade ago the Japanese Government has sought to build up large inventories of crude oil and products. Companies operating in that country were asked to maintain 6 months' storage on hand at all times. While all phases of this program were not carried out by the foreign and domestic companies it is known that the operating companies have large stocks at this time. In addition, the Japanese Army and Navy have accumulated inventories part of which are underground for protection.

The last year for which production statistics are available from Japan is 1936 when the nation's fields yielded 2,700,000 bbl., only 7 per cent of the country's petroleum requirements. Inability of Japan to acquire its normal imports of drilling equipment and other materials essential to increasing oil production has caused observers to question whether the prewar level of crude output has been maintained.

The south half of Sakhalin Island which is under Japanese control is estimated to produce 1,750,000 bbl. of crude annually. Total Sakhalin Island production is around 4,000,000 bbl. The U.S.S.R. holds the north half of the island, which produces about 2,250,000 bbl. annually.

Figures at the end of 1940, which were admittedly highly conjectural, placed the production of synthetic petroleum fuels in Japan at about 4,000,000 bbl. annually. The indigenous crude-oil production, including that from the south half of Sakhalin, would appear to total about 4,450,000 bbl. per year. The total oil supply of both crude and synthetic products available to Japan is about 8,450,000 bbl. annually, which is approximately 60 per cent of the estimated military requirements at the time the China campaign was the principal drain.

Synthetic Fuel Supply

A 5-year plan, projected for fulfillment in 1941, envisaged the production of 16,000,000 bbl. of synthetic fuel from coal and from process for the production of alcohol. Even if this program has been fulfilled, which seemed extremely doubtful at midyear because of a shortage in coal supplies and inability to obtain the equipment from Germany, the total supplies available to Japan would be only 18,500,000 bbl. annually.

There have been no petroleum shipments reported from the United States or the Netherlands East Indies to Japan since the embargo was first instituted last July. Before petroleum supplies were cut off, Japan had launched a program of expanding its synthetic-fuel production but even in the earlier stages the country was forced to import coal for its carbonization plants and several industries were compelled to turn to substitute fuels.

Japan's indigenous petroleum production is in the south half of Sakhalin Island, in Hokkaido.

Prewar Oil Chronology

Petroleum has been an important trail horse in the gradual unraveling of Japanese relations culminating this week in the start of the Pacific War.

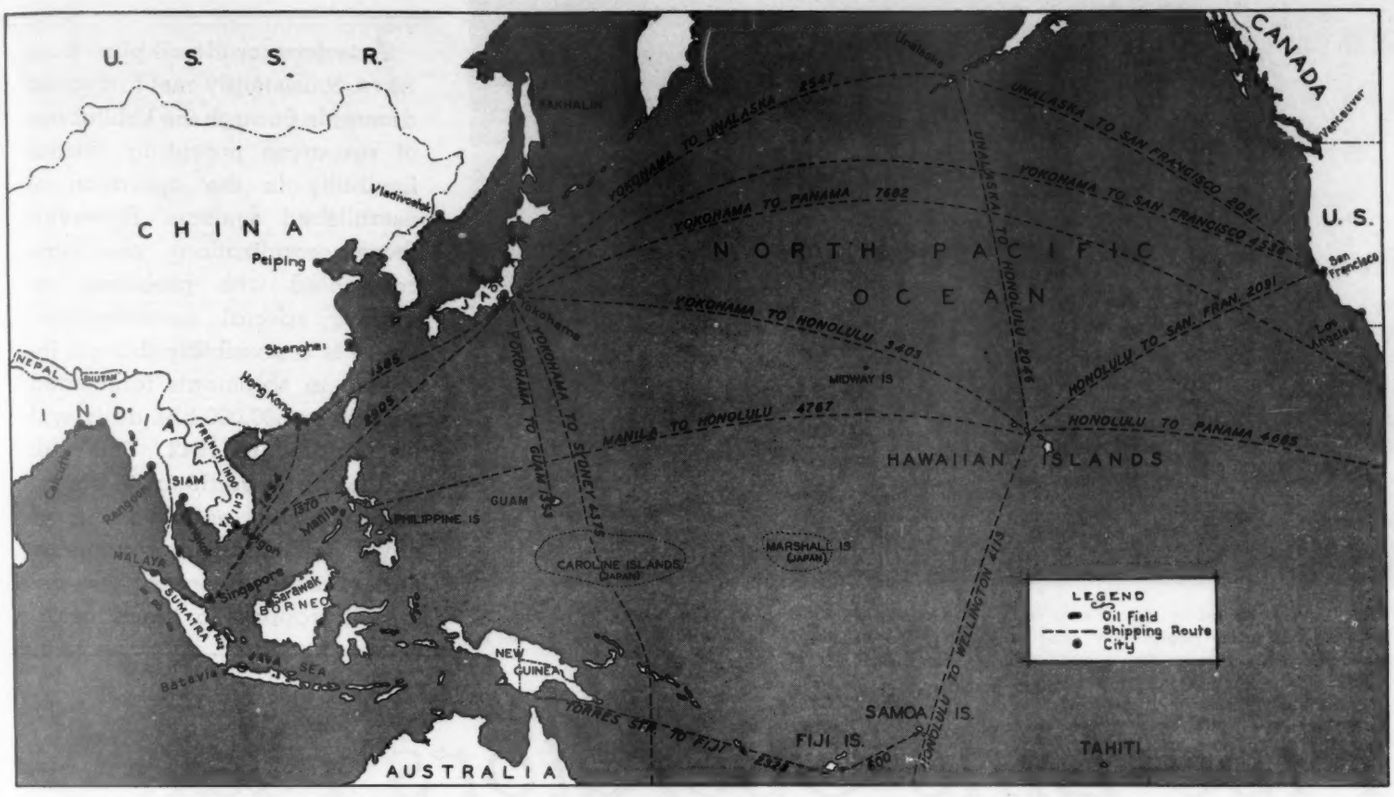
Japanese imported 88,000 bbl. of United States petroleum daily during 1938. Traffic in oil between the two countries dwindled to a daily average of 46,500 bbl. in the first 4 months of this year and ceased entirely July 26.

Three major developments have taken place in petroleum relations with Japan since that nation's invasion of China started in 1937.

American refinery-construction engineers were recalled from all countries opposing democracy in 1939. An embargo was imposed on dissemination of data or designs that would permit unfriendly nations to build aviation gasoline plants based on American technical developments at the same time.

The United States-Japanese trade agreement expired January 26, 1940, and Japan elected to turn elsewhere for part of its petroleum requirements. Presidential proclamation ended all United States petroleum exports to Japan on July 26, 1941, excepting those authorized by special license. The escape clause was never exercised.

Five days later, the Netherlands East Indies abrogated its trade agreement with Japan. The agreement, gained after long negotiation in November 1940, provided for shipments of 12,500,000 bbl. annually from the East Indies to Japan.



Japanese thrusts in the Pacific appear to be aimed at the points of strongest defense separating that empire from the coveted petroleum supplies available in the Netherlands East Indies

Honsnu, Manchukuo and Formosa. The country has more than 30 oil refineries with a total crude-oil capacity of 63,670 bbl. daily. Approximately half of the refineries have capacity of less than 1,000 bbl. daily. One of the most modern refineries is that of Mitsubishi Oil Co., Ltd., at Kawasaki, near Yokohama, which is equipped with a polymerization and hydrogenation plant for production of isooctane. There were several projects for refinery construction to improve quality of Japanese motor-fuel production under way or contemplated at the time the U. S. Government placed a prohibition against disclosure or export of engineering designs for aviation-gasoline plants.

There had been a gradual shrinkage in United States' petroleum shipments to Japan before the embargo order was issued July 26, 1941. Oil exports to Japan reached a peak of 32,079,000 bbl. in 1938, a daily average of nearly 88,000 bbl. This traffic declined to 27,452,000 bbl. in 1939 and a further decline to 24,889,000 bbl. was reported by the Bureau of Mines in 1940. Exports to Japan totaled 20,805,000 bbl. in 1935, 16,761,000 bbl. in 1936 and 22,653,000 bbl. in 1937.

The daily average of petroleum acquired by Japan in the United States for the 6 years from 1935 to 1940, inclusive, was 65,985 bbl., which is about 60 to 75 per cent of the total estimated consumption during that period. The total civilian and military petroleum requirements of Japan are estimated at approximately 110,000 bbl. daily which is 70,000 to 80,000 bbl. per day less than the average production from the Netherlands East Indies. This adequate supply of petroleum in the East Indies, only 3,000 nautical miles from Japan compared to a distance of 4,536 miles from California, has been long coveted by the Japanese.

LOCATION AND CAPACITIES JAPANESE REFINERIES

Company and location—	Crude capacity (bbl. dly.)	Cracking plant Capacity (bbl. dly.)	Cracking plant Type
Aikoku Oil Co., Kawasaki	2,000	1,000	....
Asahi Pet. Co., Ltd., Tokio	500	....	....
Asahi Pet. Co., Ltd., Hikoshima	500	....	....
Hayama Oil Co., Kawasaki	3,000	1,000	....
Imperial Japanese Navy	3,000	1,500	....
Chosen Sekiyu Kaisha, Genzan, Korea	4,000	1,250	Cross
Mitsubishi Oil Co., Ltd., Kawasaki	5,000	....	....
Nippon Oil Co., Ltd., Amagasaki	4,000	4,000	Cross
Nippon Oil Co., Ltd., Kashiwazaki	3,000	1,500	....
Nippon Oil Co., Ltd., Niigata	2,800	....	....
Nippon Oil Co., Ltd., Akita	4,000	1,000	Cross
Nippon Oil Co., Ltd., Tsurumi	6,000	....	....
Nippon Oil Co., Ltd., Kudamatsu	4,000	1,000	Dubbs
Nippon Oil Co., Ltd., Kudamatsu	4,000	1,000	Cross
Nippon Oil Co., Ltd., Karukawa	300	....	....
Nippon Oil Co., Ltd., Byoritsu	200	....	....
Ogura Oil Co., Ltd., Tsurumi	7,000	1,000	Cross
Ogura Oil Co., Ltd., Tokio	3,500	2,000	Cross
Maruzen Sekiyu Co., Osaka	1,000	....	....
Maruzen Sekiyu Co., Niitsu	120	....	....
Niitsu Sekiyu Co., Nakadari	700	....	....
Niitsu Sekiyu Co., Niigata	500	....	....
Niitsu Sekiyu Co., Akita	200	....	....
Toho-Sekiyu, Yokohama	500	....	....
Toho-Sekiyu, Osaka	700	....	....
Toyo-Shoko, Yokohama	500	....	....
Nihon-Seiro (Shale), Tokuyama	1,200	....	....
Other companies	1,450	....	....
Total	63,670	15,250	

Henderson Delays Price Action

WASHINGTON, D. C., Dec. 8.—Further delay in any decision with respect to the numerous requests for increases in the prices of crude oil was in prospect today with the announcement by Price Administrator Leon Henderson that the study of Mid-Continent production costs is to be expanded to include a full investigation of costs throughout the United States.

In a statement issued jointly by Mr. Henderson and Chairman Raymond B. Stevens, of the Tariff Commission, it was explained that the commission will undertake the field work and subsequent compilation of the data obtained.

Questionnaires are being sent out to approximately 10,000 operators in the United States, accounting for an estimated 95 per cent of crude-oil production. By far the bulk of those receiving the request for data, he said, will be small independent producers.

"An endeavor is being made to send questionnaires to every producer in the United States wishing to submit data," Mr. Henderson explained in this statement. "If anyone should be omitted, it is requested he obtain forms from either his local association or by writing the Tariff Commission at Washington, D. C.

"It is hoped that all the smaller producers will return the questionnaires promptly as, among other matters, a study will be made as between large and small producers and flush and stripper wells."

Material asked for in the questionnaires includes information on costs entering into the production of crude oil and the discovery of new crude reserves, engineering and oil-reserve data, and earnings data.

The questionnaires are to be completed and returned not later than January 31, 1942.

Today's announcement of the new cost study came as a distinct surprise. Only a week ago Mr. Henderson, in a letter addressed to "members of the industry," outlined procedure by which price increases might be obtained, if "reasonable and justified."

Section of pipe carried by three tractors for a river crossing for one of the 13 loops, totaling more than 200 miles of 10-in. in the program now being completed by Gulf Refining Co., Tulsa Pipe Line Division, in order to increase capacity between Glenn Pool, Oklahoma, and Dublin, Ind.

American crude-oil pipe lines have consistently met increased demands through the skillful use of resources providing certain flexibility in the operation of established systems. However, these organizations are now confronted with problems requiring special consideration. There is a possibility that an increase in shipments forecasted as high as 500,000 bbl. daily will be handled in 1942. This will call for large additions to equipment as well as utilization of novel technical improvements and unusual emergency measures appropriate for the industry.

Pipe-Line Operators Plan For Increased Needs

By PAUL REED

DURING 1941 all of the eastern crude-oil trunk lines and a large proportion of the Mid-Continent systems have been operating beyond normal capacity. However, the early return of 40 of approximately 80 tankers withdrawn for British service should permit these lines to return to nearly normal capacity.

But even so, in anticipation of demands of 1942 which have been forecasted to be as much as 500,000 bbl. per day more than in 1941 it would be logical to expect a need for additions to trunk-line facilities in the form of pumping equipment as well as pipe for loops. Furthermore, a fact not generally known outside the industry is that new gathering facilities and laterals must be provided each year for new areas as a routine matter to offset the natural decline of older fields. Correspondingly, the existing gathering facilities must be extended to take care of the growth of existing fields. The carrying capacity of laterals to trunk lines must be increased by laying sections of parallel lines known as loops and by additional pumping equipment at the stations. Such provisions are particularly needed by systems in the Mid-Continent. New discoveries are being made at what were regarded as frontiers a few years ago. Consequently, pipe lines must stretch farther and provide longer lines to transport this oil.

Expansion of Pipe-Line Capacity

Typical of this condition is the extension of pipe-line gathering facilities and the increase in capacity of laterals and trunk lines of pipe-line companies serving new developments in western Kansas. In connection with this program, provision is also being made for the movement of additional oil from Wyoming.

For example, Stanolind Pipe Line Co. has just completed 62 miles of 10-in. loops between Washington, Kans., and Freeman, Mo., which will add 13,000 bbl. capacity to the trunk-line system serving western Kansas and Wyoming bringing it up from 32,000 bbl. to 45,000 bbl. In addition, 54 miles of 12-in. are now being laid between these points, which with the installation of additional pumping equipment at Elmont station, Kansas, in this section, will add another 10,000-bbl. capacity, bringing the total capacity of this section of the line up to 55,000 bbl. daily. The enlarged trunk line will provide for handling 20,000 bbl. from Wyoming and, ultimately 35,000 bbl. from western Kansas. Between Washington, Kans., and western Kansas, Stanolind's 10-in. lateral is being increased from 22,000 bbl. to 28,000 bbl. by the construction of the Laton station, which will operate at 1,200-lb. pressure. The increase in pipe-line capacity of Stanolind Pipe Line Co. as well as the looping planned by Kaw Pipe Line Co. and Socony-Vacuum Oil Co., Inc., White Eagle Division, will make it possible to extend gathering systems to new fields and to increase runs from those already connected as soon as authorization is provided by proration authorities. Pipe-line expansion of all companies serving Kansas will soon relieve the situation where systems have been operating under emergency conditions. This expansion will furnish facilities making possible small increases in allowables as well as providing for new developments.

A further example is the Tinsley field, Mississippi, producing 75,000 bbl., where Standard Oil Co. of New Jersey interests are planning a line to Baton Rouge, La., and Sohio Oil Co. is considering a line to Memphis, Tenn. Each of these lines will be over 150 miles in length. Texas Pipe Line Co. is building a 101-mile 8-in. line from the new Apache field to Seminole, Okla.

Pipe-line shipments to the East Coast by Standard Oil Co. of New Jersey from East Texas, North Louisiana and Arkansas as well as those by Gulf Refining Co. from Oklahoma will be continued. These total about 40,000 bbl. daily. Trunk-line shipments to the East Coast from Illinois will continue while tank-car shipments are reduced. Gulf Refining Co., Tulsa Pipe Line Division, is completing more than 200 miles of 10-in. in 13 loops between Glenn Pool, Oklahoma, and Dulbin, Ind., which will increase the capacity of the system between these points by 10,000 bbl., giving the system a total capacity on completion of 53,000 to 55,000 bbl.

There is little prospect that steps will be taken for pipe-line construction between Lima, Ohio, and western Pennsylvania in the near future because of the uncertainty of paying out the investment. Expansion of pipe-line facilities to provide adequate outlet for the great reserves of West Texas would probably call for more pipe-line construction than would be required for any other section.

A Trunk-Line Expansion Program

To get additional capacity for a trunk-line system, it is frequently possible to obtain satisfactory results by making changes at critical points. An example of this may be cited in the case of a major crude-oil pipe-line system handling ship-

ments from Mid-Continent and Illinois fields for which a 15 per cent increase in capacity is now planned. Between a junction point and the Lake Michigan refining area, the trunk line has already been half looped. Pumping equipment at the junction station is capable of handling shipments at the rate of approximately 100,000 bbl. per day. In recent weeks shipments have sometimes been as high as 102,000 bbl.; but most of the time, except when movement was slowed down while overhauling equipment, shipments have been at a rate between 90,000 and 98,000 bbl. per day. As a result of a program for laying two 12-in. loops totaling 32 miles in length in the later winter or early spring of 1942 at this half-looped section of the line between the junction and refinery area it will be possible to increase capacity in the following manner. By continuing to operate the station at the junction without increasing the horsepower of the present equipment, the new loops will make it possible to pump 15 per cent more crude, totaling 115,000 bbl. daily, at a lower pressure than the 750-lb. pressure at which oil is normally pumped at this point under present conditions; larger pump plungers will be installed in connection with this lower-pressure operating program. By the installation of equipment for increasing the horsepower of the station sufficiently for pumping at 750 lb. at some time in the future after the new loops have been installed, the company will be able to move 145,000 bbl. per day. Before planning the 1942 looping program to increase capacity from 100,000 bbl. to 115,000 bbl., the company considered the alternatives of moving in additional pumping equipment or installing superchargers. Under the circumstances it was logical to add a comparatively short amount of looping which would immediately result in a substantial increase in capacity at lower-than-normal pressure. At the same time, line capacity is provided for handling much larger shipments when station horsepower may be increased at some later date.

The greatest part of the 500,000-bbl. increase in production anticipated for 1942 is expected to come from Texas. To provide for moving the additional load in 1942, sufficient tanker capacity will be required as well as enlargement of pipe lines by loops, extensions and additional pumping capacity. The construction of Portland-Montreal, Plantation, and Southeastern pipe lines relieves the situation by freeing tankers capable of making deliveries from the Gulf Coast to the East Coast.

In view of these heavy schedules of operation and expansion in 1942 to meet petroleum requirements, the pipe-line industry is confronted with the problem of obtaining adequate supplies of materials, principally pipe, machinery, valves, and fittings. Under present circumstances, machinery will be more difficult to obtain than pipe because of the machine operations required in manufacture. As a result of the simplicity of pipe-making methods, pipe should be obtained more readily. The output of pipe depends primarily on the availability of billets and plates since it is generally understood that pipe-manufacturing facilities are adequate. In the face of the difficulties presented in obtaining supplies of all kinds resulting from demands of war industries, there are favorable aspects in the outlook because of evidence that government authorities have a growing appreciation of the need for maintaining the transportation branches of the petroleum industry in a healthy condition.

Electric Centrifugal Pumps

In addition to utilizing these new supplies of material, the industry might be able to aid in meeting its requirements by adopting unusual methods and by deviating from practices which are customary under normal conditions. Some of these methods have already been made part of pipe-line programs for meeting emergency conditions. On certain new lines, electric motors have been installed because of difficulties in obtaining diesel engines. But deliveries of electric motors are frequently delayed.

Faced with the problem of providing additional horsepower at trunk-line stations and not being able to obtain new machinery for this purpose, the industry has a novel means for meeting the present emergency situation in the use of superchargers for diesel engines. One organization is planning to install superchargers on 11 diesel engines at 10 stations in Missouri and Illinois. Because of the great demand for superchargers for military and naval equipment, deliveries are necessarily slow, but they are more readily and economically obtained than diesel engines providing equivalent horsepower.

Superchargers for Diesel Engines

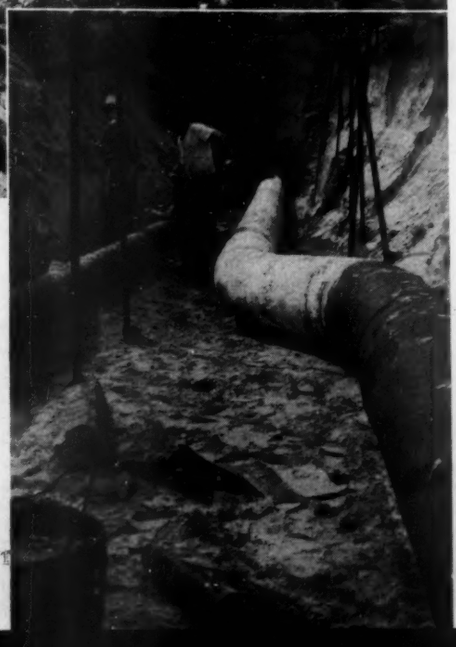
Engineers have pointed out that with some types of engines, a 500-hp. engine could be increased 8 per cent or 40 hp. by conversion from air injection to solid injection and by another 23 per cent by speeding up from 225 to 277 r.p.m. On top of this, the most important increase of 50 per cent can be made by the installation of a supercharger which adds 332 hp. The engine finally attains a total of 996 hp. By making necessary changes in the engine and pumping equipment as well as by operating at higher pressures, capacities can be increased effectively.

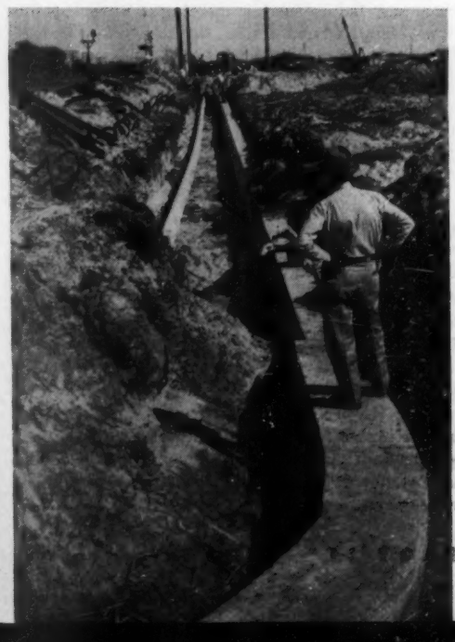
In comparison, the laying of loops to increase capacity is in most cases much more expensive. Loops are practicable as a means of increasing capacity by providing facilities for operating at reduced pressure.

Loops may be desirable where only limited horsepower is available. The disadvantage of laying loops in lines to meet a temporary peak load lie not only in the large investment required but also in the comparative permanency of an installation which cannot be easily salvaged for use elsewhere after the peak load has passed. The possibility of moving pumping units from one station to another also provides flexibility in the operation of a pipe-line system.

Emergency Measures

It would be helpful if the industry could work out a plan whereby lists of major repair parts carried in warehouse stock could be made available for the exchange of information regarding materials that might be available for meeting an emergency. Such a plan might save the industry





In the course of laying 150 miles of pipe in sections between North Texas and Whiting, Ind., this year to adapt Stanolind Pipe Line Co.'s trunk line for segregation of three grades of crude oil, 18-in. pipe was laid. This is probably the largest pipe in crude-oil service. In the same ditch an 8-in. gasoline line was also laid only where the routes of the two lines traversed congested areas. The 8-in. pipe is part of the 150-mile gasoline pipe line laid by Standard of Indiana between Whiting and Indianapolis, Ind. For 7 miles through a congested industrial area, lines were covered with concrete to protect coated pipe against damage from other construction operations. Water table is not more than 20 in. below the surface in some places

CONSTRUCTION OF A NEW BETHEL EVANGELICAL LUTHERAN CHURCH AT AVOCA, IN JONES COUNTY, TEXAS, SHOWN HERE, HAS BEEN MADE POSSIBLE BY THE PRODUCTION OF OIL DISCOVERED ON CHURCH PROPERTY IN APRIL 1938. TWO-THIRDS OF THE $50,000 COST IS BEING PAID FROM OIL REVENUES.

This Week...

Chairmen of the district refining committees asked the OPC to explore the possibility of making more lead available from marginal mines when they met in Washington, D. C., Tuesday to discuss the outlook for a shortage of tetraethyl fluid. If the shortage persists they want an OPC recommendation providing for machinery with which to adjust gasoline inequalities in their districts.

●

Aviation gasoline will have to be produced faster than anyone thought it could be produced, Coordinator Ickes told the national oil council, giving a tip to refiners on events ahead.

●

Japan has between 8,000,000 and 10,000,000 bbl. of indigenous crude oil and synthetic fuel with which to prosecute its war against the United States and the South Pacific. Japanese military consumption when fighting only in China is estimated at 14,000,000 bbl. annually. There are about 30 refineries in Japan with capacity of 83,670 bbl. daily.

●

Coordinator Ickes left organization of the Petroleum Industry Council for National Defense to the 66 members, told them that they were to see that every barrel of oil needed for defense and offense is laid down on the spot where it is required at the time it is required.

●

Twenty-six members of the defense council were organized into an executive committee Tuesday. W. R. Boyd, Jr., president of the A.P.I., was elected chairman.

●

Petroleum equipment supply companies were authorized to originate priority ratings of A-8 on their material needs in the new Preference Rating Order P-83 issued Monday. Another order is scheduled for issuance this week extending the same priority number to operating divisions.

●

A field-wide salt-water injection program for East Texas is taking shape. The conservation branch of the Office of Petroleum Coordinator has urged this development. Operators have been meeting for more than a month, discussing details.

●

Most refiners in the Mid-Continent have withdrawn quotations on wax until they can obtain an interpretation of the Office of Price Administration's ceiling order.

●

Deferment of the OPA's conclusions on requests for Mid-Continent and Pennsylvania crude-oil price advances until the last of January or later is indicated by expansion of the study to a nation-wide basis. The Tariff Commission is doing the field work and will compile data obtained.

●

Use of base stock of not more than 65 octane in the production of all aviation motor fuel finished to 85 octane or less was ordered in a formal recommendation from the OPC. Earmarked for diversion to military fuel of 91 or 100 octane will be a larger volume of base stocks whose inherent qualities permit.

●

Postponement of the International Petroleum Exposition, originally scheduled for May 1942, confirms the tenor of sentiment in the oil industry that exhibits should be delayed until operating conditions return to normal.

●

The fastest tanker-construction record in the United States is about to be claimed. Navy hull No. 1491 will be completed December 27, exactly 90 days since the keel was laid.

from making investments in additional warehouse stocks at a time when manufacturing facilities are urgently needed for primary defense. The plan would be advantageous since it would provide a way to obtain major repair parts without delays.

A crankshaft, representing a major part in a large engine, seldom fails, but a real emergency exists when failure occurs. For this reason, if one or two such parts for a particular type of engine might be made available in the warehouse stocks of one or two companies, they would be adequate insurance for meeting failures of this type for all companies having similar equipment.

Appreciable supplies of pump and engine parts are held in stock by pipe-line companies. Through cooperative use of these in the aggregate, the industry could aid in meeting the problems of supplying major parts that are difficult to obtain from manufacturers in this critical period.

Conservation of pipe might be affected by eliminating duplicate facilities in the old fields where one system would be adequate for serving declining production under a plan whereby substantial amounts of pipe and other materials could be reclaimed for use by individual companies in other fields.

In the active months ahead, it is certain that the pipe-line industry will be able to proceed in solving its problems with the ingenuity and resourcefulness for which it is noted provided that government authorities continue to recognize the importance of pipe-line transportation for national efficiency.

Postpone Oil Show Scheduled For May 1942 in Tulsa

THE International Petroleum Exposition has postponed the oil show which was to have been held in Tulsa in May 1942. This action was officially taken at a meeting of 150 exhibitors in Tulsa on Monday, December 8. Sentiment against the advisability of proceeding with the plans for next year's exposition was widely expressed prior to the vote. Scarcity of materials for exposition purposes and demands upon manpower, both military and industrial, which would affect attendance were the two reasons for the postponement.

It was generally agreed that it would be impossible to set a definite date under present conditions. The exposition officials stated that affairs would be in readiness so that the show could be rescheduled at the first favorable opportunity. Obviously, no one knows when world conditions will permit its resumption. To the end that advice and suggestion would be received by the exposition along this line, a resolution was passed instructing the executive committee to select an advisory committee of 12 to be chosen from the exhibitors. The duty of this committee is to reflect the sentiment of manufacturers concerning the timing of the next International Petroleum Exposition. This advisory committee is not yet named.

A resolution was passed instructing the exposition to retain the money which has been paid and is to be paid for space already allotted for the next exposition. From these funds will be paid the necessary maintenance and cost of keeping together a skeleton organization to take care of the property.

This method of financing the show was heartily endorsed by the Petroleum Equipment Suppliers' Association through the spokesmanship of Fred F. Murray, vice president of Oil Well Supply Co. The San Francisco action of the Petroleum Equipment Suppliers' Association requesting the postponement of the show was presented to the meeting by Mr. Murray.

John R. Suman, president, Oil World Exposition, Inc., Houston, Tex., sent the following telegram to The Oil and Gas Journal:

"Executive committee of Oil World Exposition last August voted to postpone Houston Show for duration of the emergency and advised President Skelly and executive committee of International Petroleum Exposition that the Houston group was willing to postpone for duration of emergency all oil shows with the distinct understanding that when shows are renewed Tulsa can have the first show and Houston will plan for one a year or two afterward."

Defense Council Holds Initial Conference

By HENRY D. RALPH

WASHINGTON, D. C., Dec. 8.—The oil industry today mobilized for war, the first major industry of the nation to act following the Japanese attack on the United States.

Even before Congress, responding to President Roosevelt's personal appeal, declared that a state of war exists, 66 leaders of the oil industry formed themselves into a petroleum council of war and began immediate planning to put the industry on an all-out war footing.

By a fortunate coincidence, outstanding leaders of all branches of the industry and its trade associations assembled here just as Washington became a war capital. They had been called by Petroleum Coordinator Ickes to form an advisory council, and while a radio in their conference room brought in news flashes on Japanese bombings and American retaliation, they plunged directly into the task of carrying out the new war duties placed upon the oil industry.

While details of the program remain to be worked out in cooperation with the Army and Navy strategy board, the industry knew instinctively what is expected of it as producer of the life blood of the modern war machine.

Production and refining will be stepped up, at any cost, and civilian consumption curtailed to whatever extent is necessary to supply military and naval needs, and those needs, of course, are official secrets.

Tankers to service our far-flung Pacific battle line will be requisitioned as needed, unquestionably depleting the Atlantic Coast run and again threatening a shortage in the East. The Maritime Commission at once invoked secrecy on publication of announcements or pictures containing any information, direct or indirect, concerning the movement, position, cargoes or destination of any merchant vessels, including tankers, in any waters.

Curb Aviation-Fuel Information

Production of aviation gasoline must be stepped up tremendously and at once, which unquestionably will mean a lowering of the octane rating of civilian motor gasoline. Since aviation gasoline is an important munition of war, no further information will be given out regarding location and activities of refineries producing it.

Opening the meeting of the council, Secretary Ickes stressed its timeliness. He told the group that it would be its duty to see that every barrel of oil needed for defense or for offense is laid down on the spot where it is required at the time it is required.

"The most important single instrumentality in winning this war is oil," he declared.

Following a short discussion of German and Japanese petroleum reserves, Mr. Ickes warned that the Japanese will make every effort to sink all tankers supplying our outlying military bases in Hawaii, the Philippine Islands, Alaska, and other islands in the Pacific. Thus far, he said, the United States has delivered 100 per cent of all requests for petroleum products which have been received from Russia.

With respect to refinery capacity for 100-octane military aviation gasoline, the coordinator said that we will have to produce it "and produce it faster than anyone ever thought it could be produced."

The nation, he asserted, now more than ever, needs the help and full cooperation of the entire oil industry as represented by the council. He explained that the setting up of this group will complete the organization of the industry for defense. This organization is not designed to supersede the district organizations but will supplement these groups, he said.

Suggest Monthly Meetings

After the opening remarks of the coordinator, following which he left the conference, Deputy Coordinator Davies outlined what he described as the coordinator's hopes and ideas regarding the organization of the council. He suggested that regular meetings be held on the first Tuesday of every month and urged the establishment of a national headquarters.

Mr. Davies and all members of the staff of the coordinator's office then retired from the meeting, with the statement that it was the purpose of the coordinator to let the council organize as it saw fit, and that the organization problem was strictly the industry's problem.

William R. Boyd, Jr., newly elected president of the A.P.I. and council chairman, expressed his sincere appreciation of the opportunity being afforded the industry to aid in the war efforts of the country. The relationship which has been established between the coordinator's office and the petroleum industry, he declared, should serve as an object lesson to other government agencies in their relation to industry.

Membership on the council is the same as published in The Oil and Gas Journal December 4, with two exceptions. D. J. Moran, president of Continental Oil Co., and Will J. Reid, president of Hancock Oil Co., were unable to serve and they were replaced by Ralph B. Lloyd, president of Lloyd Corp., Inc., and Parker L. Melvin, president of the Pennsylvania Grade Crude Oil Association.

BOYD NAMED CHAIRMAN

THE Petroleum Industry Council for National Defense Tuesday elected W. R. Boyd, Jr., as its chairman, and the following 25 individuals as members of its executive committee: John A. Brown, J. C. Hunter, Frank Buttram, W. W. Jones, H. D. Collier, B. L. Majewski, O. D. Donnell, Henry D. Moyle, J. Frank Drake, I. A. O'Shaughnessy, W. S. Farish, J. R. Parten, W. H. Ferguson, J. Howard Pew, George A. Hill, Frank Phillips, William F. Humphrey, W. S. S. Rodgers, E. E. Pyles, Charles F. Roeser, H. F. Sinclair, Lawrence Vander Leck, R. Van Der Woude, A. L. Weil, E. G. Seubert.

W. R. BOYD, JR.

Refiners Study Shortage of Lead for High-Octance Fuel

WASHINGTON, D. C., Dec. 9.—Refiners, marketers and engineers in the Office of Petroleum Coordinator met today to map out a procedure to best meet the prospect of getting less tetraethyl lead with which to increase the octane value of their gasolines. After a brief statement by R. K. Davies, deputy coordinator, the group appeared to agree that more lead could be made available and that would be more economical to the country as a whole. However, if added lead is not made available from marginal mines and at higher market prices, then refiners are asking that OPC give the respective marketing districts a definite recommendation that these districts set up their own machinery to equalize inequalities in the octane values of the respective grades and brands marketed. There was no thought expressed to discontinue the use of lead in the premium or house-brand gasolines but support for the use of lead in the third grade was absent.

Since the "question is solely one of the relative economic gain or loss through the diversion of these raw materials from tetraethyl lead manufacture to other channels of civilian consumption," the refining and marketing committees of District 1 have passed a joint resolution urging the Government to allocate sufficient supplies of chlorine and lead to maintain present gasoline quality. The resolution was the outcome of a study of the problem which the petroleum coordinator's office asked these committees to make.

An increase in the public's motor-fuel bill of a minimum of $125,000,000 annually was predicted if the curtailment was effected. Such an increase would result from the lower quality of fuel which in turn would make a larger public consumption of a less efficient grade. It was also pointed out that the efficiency of truck and bus operations would be lowered, which would accordingly affect commercial transportation.

Stanolind Buying Landreth Production Corp. Properties

FORT WORTH, Tex., Dec. 9.—Stanolind Oil & Gas Co., Tulsa, producing subsidiary of Standard Oil Co. (Indiana), has consummated negotiations for purchase of Landreth Production Corp. properties in West Texas and Lea County, New Mexico, subject to approval of titles and check of inventory.

Stanolind will acquire 189 producing wells with an allowable of about 4,500 bbl. per day in the Landreth deal. The consideration was not mentioned.

Fitts Properties Sold

A group of employes and his attorney have purchased holdings of E. H. Moore, Tulsa, in the Fitts pool, Pontotoc County, Oklahoma. Consideration was about $1,000,000. Buyers of Mr. Moore's property, which consists of a half interest in 132 wells and approximately 4,000 bbl. of daily production, are Levi Ackley, G. M. Welling, Chester V. Wilcoxson and Villard Martin.

STATE CAPITALS...

OKLAHOMA

POTENTIALS OF ALL WELLS in the Oklahoma City Wilcox zone and in Class B pools for the period January-July and in Class C pools of the state for the period February-August, 1942, will be determined by the Corporation Commission after a hearing at Oklahoma City set for December 22.

MARKET-DEMAND HEARING for the determination of state-wide production allowables for January was set by the Corporation Commission for December 22 at Oklahoma City.

TEXAS

POWER TO PRORATE oil production on the basis of state-wide market demand was strengthened last week by an opinion handed down for the ninth Court of Civil Appeals at Beaumont, Tex., by Chief Justice Daniel Walker. The court reversed a ruling of a Travis County District Court, upheld the validity of the Railroad Commission's oil-proration order as applied to the Conoco-Driscoll field in Duval County and dissolved all injunctions granted by the lower court. These injunctions had prohibited restriction of production in the field operated by the Continental Oil Co.

It was generally agreed that the proration formula now used by the commission in fixing allowables was being attacked in the suit, and thus the action of the court was interpreted as sustaining the commission's formula.

Chief point advanced by Continental was that the commission could restrict production at Conoco-Driscoll only to prevent physical waste. Attorneys for the company argued that state-wide market demand should not form the basis for proration of this field since the question of correlative rights of various owners was not present, there being only one owner. They argued further that the company had created the market demand for the field of 4,000 bbl. a day (by building a pipe line) and that therefore it was being unfairly restricted and its market being given to other fields.

The court found, however, that the commission was directed by law to make its orders with intent to keep the state's production from exceeding current consumption and denied that the market-demand statute took Continental's market and gave it to other pools.

"The commission simply said to appellee (Continental) that though it controlled its pool, it could not use its control as a legal principle to seize a lion's share of the state allowable at the expense of other pools," Judge Walker wrote.

To Continental's complaint that there was market demand for 4,000 bbl. daily from the field, a market which would have to be filled by some other pool, the court replied that such a construction would take from the commission all power to administer equitably the proration laws, since all other oil pools could invoke the same proposition to increase their production.

CONSERVATION OFFICERS BECOME GUARDS

First state regulatory body since war started to announce it had taken steps to assist in guarding oil properties against sabotage was that of Oklahoma. Reford Bond, chairman of the state Corporation Commission, said deputy conservation officers, who are scattered through the oil districts of Oklahoma, have been instructed to double their efforts in inspections of properties "not only in the conservation of oil, but especially to be alert toward any possibility of sabotage of our natural resources."

Deputies were organized last summer into an oil-field patrol as part of the state's home-guard defense work. Home-guard organization has been changed since, Mr. Bond said, but the commission's deputies continued their work.

CALIFORNIA

THE CALIFORNIA CONSERVATION plan, formulated by a committee of operators in District 5, has been under discussion in Washington for the past few weeks and its acceptability should be determined within the near future by Secretary of the Interior Ickes, the petroleum coordinator, and the Department of Justice. Details of the plan have been closely guarded since formulation.

Early action is anticipated, however, with the result that it may become effective with the start of the new year.

The Garland investigating committee meeting scheduled in Sacramento on December 8 has been postponed until December 19, at which time the group is expected to go into natural-gas production and distribution. This committee may propose certain regulations to the 1943 legislature for action along with approval of the state Railroad Commission and the Department of Natural Resources, both of which have been making surveys on natural-gas production, distribution and available reserves. The Garland committee started out, however, with the announced intention of "keeping Ickes out of California," but appears to have become less militant with respect to the petroleum coordinator although Mr. Ickes is still in disfavor for not appearing at the committee's hearing in San Francisco, which was conducted at the time the A.P.I. was holding its annual meeting in November.

NEW MEXICO GEOLOGIST . . .

JOHN M. KELLY, state geologist for the New Mexico Conservation Commission, Santa Fe, N. M. He was formerly engineer for the Lea County Operators' Committee at Hobbs. He is a graduate of the New Mexico School of Mines, receiving his degree in mining engineering in 1936. He is also a member of the New Mexico Conservation Commission executive committee

ILLINOIS

THE FEDERAL GOVERNMENT has agreed to "backstop" Illinois' oil-control law with special rulings if operators in the state fail to heed a request for voluntary conservation of steel by eliminating unnecessary wells, according to Robert M. Medill, director of the Department of Mines and Minerals.

Decision of Director Medill and G. C. (Clem) Curtis, director of the new Division of Oil and Gas Conservation, to abide by the government order was made at a conference in Chicago with Wirt Franklin and other representatives of the office of Secretary of Interior Harold L. Ickes, petroleum coordinator.

Mr. Franklin told the state officials the Government was interested in projecting a "forced program" solely in the matter of conservation of the metal for national defense.

In view of the national-defense question and the desire of officials to preserve "state rights" as much as possible, it was reliably reported the administration will press for strengthening of the present law should a special session of the legislature be convened before January 1943.

The agreement with federal officials was reached after Mr. Medill announced appointment of a chief inspector, 12 inspectors and 5 deputy inspectors to carry on the oil division's work in the field.

Newly named inspectors are John V. Oldani, Herrin; Ransom R. Randolph, Harrisburg; A. C. Stoltz, Lawrenceville; Sherman Heape, Elkville; Joseph E. McMullen, Collinsville; Jack Mulligan, Decatur; Bert Wilson, Carlinville; Elmer Gibbons, Harrisburg; Wayne Fitzgerald, Sesser; William J. Tannehill, East St. Louis; Cloyd Bradham, Cisne, and Clint Lindsay, Flat Rock.

Deputy inspectors are Ed Fox, Centralia; John McMillan, South Standard; H. Bruce Thompson, West Salem; Joseph M. Long, Hillsboro, and George W. Williams, Shelbyville.

John W. Spence, of Fairfield, was named chief inspector, and Bernard Kahn, Pekin, was appointed public-relations officer. Six geologists will be named soon, Superintendent Curtis said, four of whom will serve as field men and two as statistical directors. They are to be selected by Dr. M. M. Leighton, chief of the state Geological Survey Division at Urbana, and will be associated with Samuel F. Peterson, of Aurora, who has been named petroleum engineer.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

Keep Prepared

This country, in its Monday declaration of war against Japan, became an active belligerent in a world conflict, fully prepared as regards petroleum. With Great Britain and Netherlands it controls all but a few thousand barrels daily of the petroleum available in the war arena which comprises a large part of the world's land and water area.

In contrast to this strength, Japan in petroleum is among the weakest of the major powers. The significance of a situation which finds that country's own petroleum supplies at the start of a war wholly inadequate will become more and more apparent as the conflict progresses and comparative strength is determined.

Japan has carried on a war against China and maintained a war economy at home with 40 million barrels of petroleum annually. This left little for private use by civilians. The military needs will now greatly increase.

To supply this requirement the island country has less than 4 million barrels within her own boundaries, not including costly synthetic operations which are partially dependent on outside raw materials for their continuance. Sizable inventories have been accumulated but these will dwindle rapidly in the military effort which she has elected to undertake.

The importance of this dearth of petroleum does not end with those matters which are concerned directly with military operations. Japan's economy in recent years has been largely developed with imported petroleum. It has been used by her industries and transportation facilities. The family car had made its appearance. Lack of petroleum, if long continued, is certain to shake her economic and social foundations as it will those of her Axis partners, all of whom are short of the essential fuel with which today's wars are being fought.

Japan has no manufacturing and supply industry to assure the materials required to drill wells and maintain processing operations at refineries. These in the past have come largely from this country, the center of petroleum's technological developments.

On the West Coast of this country several hundred large and small oil producers and the owners of 60 operating refineries and 100 natural-gasoline plants stand ready to do whatever is asked. They can supply all the petroleum required by 345 fighting ships now in the Pacific if necessary. Right now part of this supply comes from the East Indies where oil companies whose countries are allied in war have developed large production in a jungle country near the crossroads of the Orient. Oil terminaling facilities built by private interests dot the Pacific with supplies whose accessibility will be a controlling factor in the conduct of the Allied offensive.

Several thousand combat planes will not lack for the best in gasoline and lubricants. The millions that have been spent by the petroleum industry in recent years improving the quality of motor fuels and motor oils through the development of new processes will bring returns in the form of assurance that this country's flyers will have distinct advantages over the enemy.

This nation now has its own war on its own doorstep. It may quickly spread to other areas so that this country will become involved directly in the greatest war of its history. The time to look back or to the sides has passed. The solution of the ever-changing problems ahead will require all the loyalty, all the initiative and all the cooperative effort of 130,000,000 people.

Petroleum Coordinator Ickes accurately told the new petroleum council at its organization meeting in Washington that "the most important single instrumentality in the winning of the war is oil." The conflict starts with the oil industry prepared to do its part. It is the job of operators to keep it that way.

Major-Field Need Demands Outpost-Area Exploration

By W. V. HOWARD

In this article, the second of a series of three concerned with oil exploration trends, the author points out that while a large number of new discoveries and extensions of existing fields have been reported over the past 3 years there has been a dearth of major discoveries which in the past have accounted for a large part of the oil industry's proven oil reserve.

Recent developments do not point to a change in this trend according to the author who stresses the necessity of extending exploration programs into new areas in tomorrow's oil search.

IN the first article of this series, published 2 weeks ago, it was pointed out that our discovery rate of new fields is not adequate to insure the future security of the industry. As others have pointed out, the principal deficiency is not in the number of discoveries so much as the absence of large fields in the roster. It is impossible for any person to predict where we are going to find big fields, but it is possible to look back through the recent history of the industry and find how we found big fields in the past.

Analysis of recent drilling activity shows that it runs in cycles. As a general rule a period of high prices for crude means a period of increased drilling activity. Increased drilling involves increased wildcatting which in turn brings about a large number of discoveries. This simple reasoning leads to the conclusion that everything would be solved by an increase in price. Actually, there are a number of other factors which complicate the sequence.

Deep drilling now going on in northwest section of Inglewood field, California

If the price of oil increases, wildcatting does increase, but much of this wildcatting is of the random type, which is less successful than scientifically directed prospecting. Also, operators aim for smaller stakes in terms of barrels of oil. Almost every operator knows of structures that could be drilled in areas where a high yield is not expected. With oil at $1 a barrel he postpones operations. With oil at $2 a barrel he will drill a test. These structures are, of course, in the older producing sections of the country. They will not greatly increase our reserves.

Even if the price of oil were increased to permit twice as much wildcatting, we have no reason for feeling certain that the resulting discoveries would be better on the average than those found during the past 3 years. If all of the prospecting carried on in 1939 and 1940 had been compressed into a single year, it would still not have uncovered a 500,000,000-bbl. field.

Thus increased prices would improve our position to a great extent but still more important is activity which will start us off on a new cycle of major development. This requires geological speculation backed by executive support and, although higher prices might stimulate executive support, they are not as essential as a realization that, price or no price, we need more oil and we have to take heavy risks to find it. Even at present prices a new 200,000,000-bbl. field will pay the cost of discovery, development and production.

The Effect of East Texas

Before considering our reserve requirements it may be advisable to recall some of the effects that East Texas has had upon our whole production picture. Prior to 1930, the term "feast or famine" was common in oil circles. The industry faced cycles of rapidly fluctuating prices due to the fact that our reserves were hardly ever large enough. It would be nearing a period of acute shortage when a Seminole or a Long Beach, a Cushing or a Glenn Pool would flood the market. The term "optimum rate of production" was relegated to the private conversations of engineers who wished that they could slow up production a little so as to recover more oil. Proration was not considered conservation but an injury imposed on the operator by the pipe-line companies.

Suddenly the whole picture was changed. When the extent of the East Texas field was realized, proration became real conservation. The flush need no longer be taken from fields to supply an expanding market. We had a backlog which would enable operators in all parts of the country to develop fields sanely and produce them efficiently. The attempts to reach a sound engineering basis at Yates, Van and other fields were already started, but had it not been for East Texas they would have broken down through demand for the oil.

Today 11 years' supply in reserve appears to be about the point at which too great withdrawals are required and 13 years' supply is about the level at which operations can be conducted most efficiently. But in 1925 the A.P.I. was considered quite liberal when it estimated that there were about 5,000,000,000 bbl. in reserve, or only some 8 years' supply.

Modern production methods thus require that we have much larger reserves than in the past, but also that we need one or more fields with very large reserves to act as a cushion against variations in demand and also in the discovery rate. Due largely to East Texas, the State of Texas can provide a cushion by the expedient of shutdown days which, on the basis of 2 such days a week, means a variation of 400,000 bbl. a day without any change whatever in any other conservation measure.

East Texas also provides an excellent idea of the value of a new concept. The fact that East Texas was found by random drilling does not affect its value in this regard. The Woodbine sand was known as a producing horizon long before 1930. The existence of the Sabine uplift was also an old story, but East Texas was the first major discovery which involved a linking of these two

(Continued on Page 99)

PRIORITIES

Preference Order P-83 • Simplifies Procurement of Materials by Supply • Companies and Industry

WASHINGTON, D. C., Dec. 8.—A complete revision and streamlining of the entire priority system as it pertains to the oil industry has been formulated by the Office of Production Management and is being made public in fragments this week.

The new system gives more or less permanent blanket preference ratings for the manufacture and purchase of oil-industry machinery, supplies and equipment, eliminating much paper work and the necessity of using individual PD-1 forms. It will also replace the P-22 procedure for maintenance and repair supplies for the oil industry and provide a higher preference rating.

The system is a step toward complete allocation of materials which is the objective toward which OPM and the Supply Priorities and Allocations Board are working. Somewhat similar arrangements are being made for certain other essential industries.

The new setup comes close to meeting the industry demand that the oil industry be classed as a defense industry, since it is recognized by OPM that petroleum is an essential industry which must be maintained both for defense and civilian purposes.

Three Separate Steps

The new system is being put into effect through three separate orders:

1. The Production Requirements Plan (PRP), announced last week, applicable to all producing and manufacturing industries including manufacturers of oil-industry equipment and also to oil producers and refiners to the extent that they care to make use of it.

2. Preference Rating Order No. P-83, announced today, giving an A-8 blanket rating to oil equipment supply houses to maintain their inventories of raw materials and finished equipment.

3. An oil industry preference-rating order, expected to be promulgated about the middle of this week, permitting oil producers, refiners, transportation systems and marketers to originate preference ratings on essential supplies.

The three different orders thus form a complete system for the manufacture, distribution, and ultimate use of equipment and supplies needed by all branches of the petroleum industry.

The Production Requirements Plan is the first big change made in the priorities system in several months. It specifically replaces the old Defense Supplies Rating Plan and applies to all producing industries on a much wider scale. In brief, it permits any manufacturer to obtain a "permanent" (for 3 months) blanket preference rating for all materials he will need for the coming calendar quarter for the production of articles for defense or essential civilian uses.

To obtain such a rating a producer must submit Form PD-25A, now available at the Priorities Division of the OPM and its field offices. This requires a very detailed breakdown of information on the nature of articles produced, inventories of materials and finished goods, preference ratings previously obtained, amount of defense orders, and use of products, description of materials needed, and maintenance, repair and operating supplies.

This review of a major step to simplify the petroleum industry's materials-supply position and the complete text of the new Preference Rating Order P-83 takes precedence this week over the regular question and answer form of priority information.

Another order is scheduled for issuance this week, extending a preference rating of A-8 to the operating branches of the industry. The new P-83 order authorizes supply companies to originate a priority number of A-8 on their requirements for 3-month periods. Supply companies may sell materials obtained under P-83 only on orders carrying a preference rating.

Questions on application of this new order may be directed to The Oil and Gas Journal, Priorities Department, Tulsa.

By HENRY D. RALPH

After studying the information submitted on Form PD-25A the Priorities Division of OPM will issue the applicant preference ratings for so much of each required commodity as it considers necessary for the defense and essential civilian business of that manufacturer, taking into consideration currently available supplies and the general policies of OPM and SPAB. This will not be a definite allocation of materials and will not guarantee the manufacturer that he can get all the material for which he has been granted ratings. After getting his ratings in this manner a manufacturer may apply them himself, without reference to Washington, by endorsing his regular purchase orders to his suppliers.

Accompanying Form PD-25A is "Materials List No. 1," containing some 500 commodities to which it applies. Provision is made for preference ratings for materials not on this list, but in general manufacturers needing substantial amounts of any listed materials must apply under the PRP on Form PD-25A. Included in the list are all commercially important forms of steel and nonferrous metals, more than 300 chemicals, and many other scarce materials.

The PRP is designed to cover needs for materials going into goods produced for sale, but a producer coming under it must use Form PD-25A to obtain materials for maintenance, repair, and operating supplies, and cannot use P-22 or any other priorities form without special permission. However, PD-25A is not intended to replace P-22 procedure for concerns needing articles on Materials List No. 1 solely for maintenance, repair and operating supplies and not to be incorporated in products for sale. PD-25A cannot be used to obtain machinery or supplies to expand the capital equipment or producing facilities of the manufacturer obtaining preference ratings under it.

Many of the articles on Materials List No. 1 are used to some extent by oil refiners for incorporation in finished lubricants and other products, as distinguished from operating supplies, and refiners may use PD-25A to obtain preference ratings for such materials. However, it is understood that a separate preference rating order is being considered for refiners to permit them to obtain these and other materials by a different procedure.

The new Preference Rating Order P-83 applies only to oil-equipment supply houses and permits them to originate a preference rating of A-8 in ordering supplies to maintain their inventories. Supplies so obtained can be sold only on preference ratings received from operators in the oil industry, which may be under PD-1 (individual applications), P-22 (maintenance and repair) or the forthcoming general oil-industry order. A special form, PD-82A, has been issued for use of oil-equipment supply houses under Order P-83.

The new P-83 program is expected to remove the oil industry from the P-22 procedure for maintenance and repair materials used by most other industries, and will give it a higher rating, A-8 as distinguished from A-10 under P-22. It will also reduce the need for using PD-1 forms.

It also makes no distinction between repair and new capital equipment. A manufacturer qualifying under the Production Requirements Plan may use whatever PD-25A preference ratings he is given by OPM for the manufacture of oil-industry equipment without knowing whether its ultimate use is for maintenance and repair or for new capital equipment. Likewise a supplier under Order P-83 may stock and sell equipment without knowing whether it is for repair or for new capital improvements provided his sales are made on orders accompanied by preference ratings. It is expected, however, that the forthcoming oil-industry order will place limitations on the acquisition of materials for new capital equipment, and that new projects can be built only under special project ratings as at present.

Text of P-83 Order

Text of Preference Rating Order P-83 follows:

Material Stocked by Supply Houses for Distribution to the Petroleum Industry.

To:
Name of Supply House .....
Address .....
Serial No. .....

Preference rating order.—For the purpose of facilitating the acquisition of material to be held for distribution to persons engaged in the production, transportation, refining and marketing of petroleum, a preference rating is hereby assigned to deliveries to the above-named supply house and to deliveries to his suppliers, upon the following terms:

(a) Definitions.

1. "Supply house" means the specific person to whom this order is addressed above.

2. "Petroleum" means petroleum, petroleum products, and associated hydrocarbons including but not limited to natural gas.

3. "Production" means the discovery, development, and depletion of petroleum pools, including without limitation the operation of cycling plants and plants for the extraction of natural gasoline and associated hydrocarbons.

(Continued on Page 98)

Effect of Defense Activity Chief Topic at Power Meeting

By D. H. STORMONT

DALLAS, Tex., Dec. 5.—Changes in power requirements resulting from enlarged demands of the defense industries, and how these higher demands were being met by the utility companies were chief discussion topics at the thirteenth annual conference of the Petroleum Electric Power Association at its meeting here December 4-5. Developments in the producing, pipe-line, and refining branches of the industry and their effects on use of electric power were covered in various papers delivered before sessions attended by some 150 representatives of oil and utility companies.

Refinery electric and steam requirements due to the manufacture of butadiene for synthetic rubber, toluene for explosives and high-octane aviation fuels were discussed by Robert Haldane, Shell Oil Co., Inc., Houston, Tex., in the Thursday afternoon session. He said:

"The utilization of products that were formerly used for fuel gas has had a two-fold effect on steam and power systems. In the first place these products have a high calorific value, the average being about 2,500 B.t.u. per cubic foot. Consequently, about 2⅓ times the total volume of these products of natural gas must now be purchased to make up the deficiency for fuel gas. This changes the economic picture with regard to the choice of steam versus electricity for pump drives and has resulted in a turn toward electric-drive equipment in locations where a steam unit would exhaust to the atmosphere.

"Secondly, the reprocessing of these gaseous fractions has caused an appreciable increase in the demand for both steam and electricity. An analysis of one refinery shows steam requirements increased 50 per cent and electrical requirements 59 per cent in 5 years, with the net crude intake remaining constant. The actual amount of material now being recovered for these special products amounts to approximately 3 per cent of total net crude intake. Increased pumping and greater quantities of heat are required to obtain the closer fractionation necessary on both topping and cracking stills to segregate the initial products from which the desired products are obtained. Then these products are subjected to further fractionation which requires pumping and heat for segregating. And last, the actual processing required to obtain the finished product requires still further heating and pumping."

E. A. Armstrong, Public Service Co. of Northern Illinois, Chicago, in his address on "How Electric Utilities Have Met the Demand for Power," pointed out that as early as October 1939 electric utility companies began large-scale enlargements of their generating capacities. Figures supplied Mr. Armstrong by 24 Middle West companies showed these companies had installed or were installing 402,000 kw. of generating capacity at that time. These companies, with a total generating capacity of 5,155,000 kw., also were contemplating installation of another 435,000 kw.

Left: L. F. Scherer, Texas Pipe Line Co., Houston, Tex., and F. W. Littell, Shell Pipe Line Co. Middle row: K. K. Kreamer, Houston Lighting & Power Co., newly elected vice president of Petroleum Electric Power Association; E. L. Robinson, Gulf States Utilities Co., Beaumont, Tex., retiring president, and E. A. Armstrong, Public Service Co. of Northern Illinois, president during the preceding year

Left: Six new directors of the Petroleum Electric Power Club were chosen, of whom four are shown here. They are P. M. Cordell, Texas Electric Service Co., Fort Worth, Tex., who was also elected the new secretary; Glenn Coleman, Public Service Co. of Oklahoma, Tulsa; H. E. Roberts, Empire District Electric Co., Joplin, Mo., who was also chosen president, and H. C. LeVois, Gulf States Utilities Co., Beaumont, Tex.

Pipe Lines in Defense

In the Thursday morning opening session, Walter Moore, Dallas Power & Light Co., gave the address of welcome with H. E. Roberts of Empire District Electric Co., Joplin, Mo., responding. First paper then was delivered by A. N. Horne, of Empire Pipe Line Co., Bartlesville, Okla., his talk dealing with pipe lines and the national defense. Mr. Horne discussed the growth of the oil industry and pipe lines and contrasted conditions now with those of years ago. He also discussed specifications for the Texas-East Coast 250,000-bbl. capacity crude line which call for all-electric pumping stations. He cited this as an example of how electric power can be called on quickly to solve a national-defense problem.

Dave Levy and E. A. Koenig, Magnolia Petroleum Co.; R. K. Albert of Louis Allis Co., and C. G. Unlaub of Electric Machinery Co., all of Dallas, gave addresses dealing with methods of handling varying loads in pipe-line pumping.

Inasmuch as the investment in steel pipe represents about 80 per cent of the total cost of the industry's pipe-line systems, H. C. Gear, of Lone Star Gas Co., Dallas, told the group that the annual loss as the result of corrosion is more than 2 per cent of the ferrous tonnage in service. Use of cathodic protection has grown since 1932 until now about 750 units are protecting some 3,000 miles of pipe line, he pointed out.

Other papers delivered during the 2-day session were: "The Future of Oil Production Viewed From the Standpoint of Present-Day Production Practices," by Don Knowlton, of Phillips Petro-

(Continued on Page 42)

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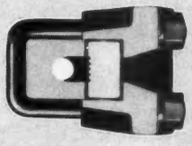

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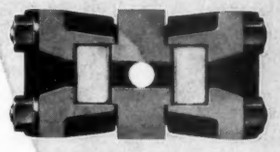

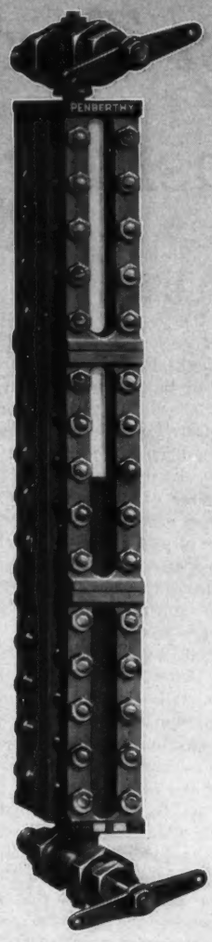

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Water shows black—steam shows white. U-bolt construction is strongest and simplest to service. Glass replaced by simply removing nuts on face of gage . . . unnecessary to work between gage and boiler.

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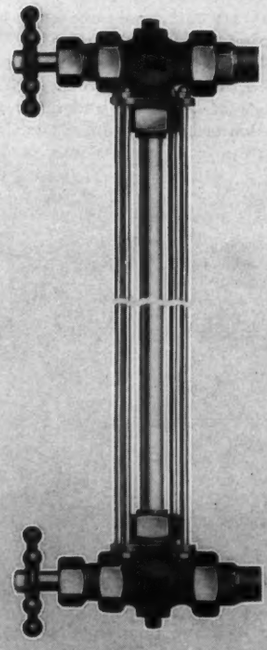

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PENBERTHY PRODUCTS

East Texas Operators to Consider Disposal Plan

By D. H. STORMONT

FORT WORTH, Tex., Dec. 8.—After many years of work on the part of various oil companies and administrative bodies, the problem of handling East Texas' increasing volumes of salt water appears to be nearer solution. Need for the reinjection of the brine to offset declining reservoir pressures and thereby conserve lifting energy has long been recognized by East Texas field authorities. In the past, though, wide diversity in the desires of operators, legal problems and other factors prevented such action. Now, with production of salt water practically equaling that of oil, the operators realize the problem has reached a critical stage and that they must soon act or the field's ultimate oil yield will be lowered and recovery costs increased.

Many legal and engineering details remain to be worked out before field-wide return of brine will be reached. It is thought, however, the new Railroad Commission order granting oil bonuses for salt-water injection, increasing interest shown by the federal Government and greater realization by operators of the large amount of oil at stake will probably act to cause the formation of a cooperative field-wide salt-water-disposal project. The factor of the federal Government is assuming enlarged proportions since the United States is at war; some observers feel that a stage has been reached where the operators must either institute such a program or stand by and let the Government do it. For, if the bulk of the salt water is returned to the Woodbine producing sand, East Texas could produce at much higher levels without the reservoir suffering.

This Wednesday all East Texas operators have been invited to attend a meeting in Dallas, Tex., for the purpose of considering the formation of such a cooperative water-disposal group, and also to discuss methods of operating under the new commission injection order. A group of the field's engineers and attorneys of various interested oil companies, headed by C. G. Condra, attorney for Stanolind Oil & Gas Co., Fort Worth, has been holding meetings for the past month to formulate plans. This group is expected to present its plans for reinjecting the field's brine output, with all operators being given full opportunity to present for discussion any other plans. From this meeting it is hoped that some definite plan will be evolved for submission to the commission for its approval.

At present there are some 46 injection systems in use, operated by 14 companies, according to recent Railroad Commission figures. These systems are taking about 72,500 bbl. daily from 1,400 wells. This amount of water returned, however, represents less than one-fifth of the field's daily water withdrawals. No water surveys have been made by the commission since last April, when the daily volume was 387,000 bbl., but the field's current production is believed to be around 450,000 bbl. daily. The commission has ordered that well-status reports be filed by December 15; these reports will be of outstanding importance as they will form the basis for granting higher allowables under the new order subsidizing water injection.

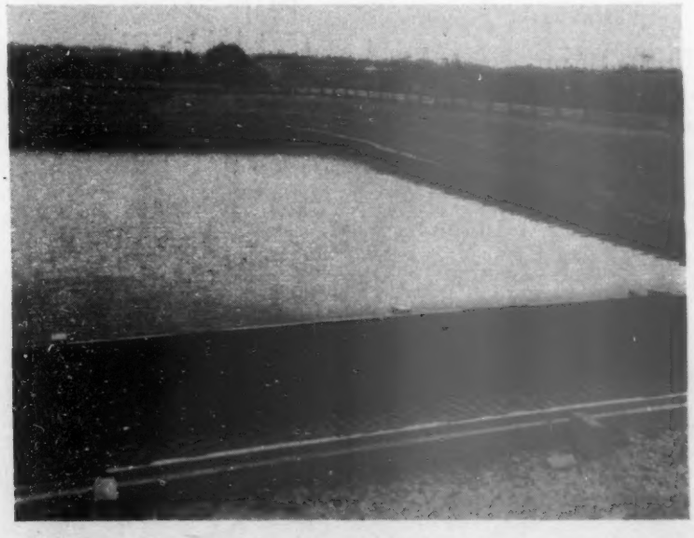
Initial costs and operating expenses of the individual units were presented before a commission hearing at Austin early in October. These costs varied widely according to the size of the plants, and as to whether they were operating at full or partial capacity. Also, the costs varied as to whether new injection wells were drilled or converted oil producers used; and if the injection wells were within or outside the field. Also, as to the basis of amortization. Some converted oil wells required only $5,000 to clean out and prepare for taking water, while others required in excess of $30,000; new wells drilled cost on an average of $15,000 per well. Total cost of the plants varied from only a few thousand dollars to over $130,000. Operating costs varied from less than 1 cent per barrel of water returned to over 5 cents per barrel, with the average being in the neighborhood of 2 cents.

Based on past operating experience, a number of operators who have been making a study of the problem prepared the data shown in the accompanying table. Capacity of the plants called for under each of the plans would be sufficient to care for the bulk of the field's present production, with additional injection capacity estimated at approximately $6.25 per barrel of capacity.

Plan A is an estimate of new cost for present requirements, using present injection facilities and future injection wells being located outside of the field. In this plan, as well as in the other two, cost of a 10,000-bbl. injection unit was estimated at $61,500 and a 5,000-bbl. injection unit at $32,250. It calls for drilling of 23 wells outside and 5 inside the field, and expanding 40 of the field's present 46 injection systems at a cost of $3,000 each; also for acquiring all of the existing units. Injection capacity under this plan would be 455,000 bbl. daily for the 74 units.

Plan B is an estimate of new cost for current requirements, using present facilities with future wells being located mostly inside the field. It calls for 7 wells to be drilled inside the field at a cost of $61,500 each and 30 wells outside the field at a cost of $32,250 each. The 40 units would be expanded as provided for in Plan A and for the acquiring of the present 46 injection systems in operation. Under this plan, which calls for most of the future wells to be inside the field, injecting capacity would be 420,000 bbl. daily for the 83 units.

Plan C is an estimate for requirements based on leaving present injection facilities at their current rate of injection and providing facilities for the balance of injection requirements, with new facilities mostly being located outside the field. Under the plan 34 wells would be placed outside the field to provide a new injection capacity of 340,000 bbl. daily, and five units inside the field with a capacity of 25,000 bbl. daily. This would provide a total new capacity of 365,000 bbl. daily, or a total field capacity of 437,500 bbl. including present injection capacity of 72,500 bbl. daily. Under this plan facilities now in operation might be retained and operated by the present owners, in which case the cost would not be considered. If the 46 plants were taken over as in Plans A and B, the cost would accordingly be increased.



Receiving pit for all water produced by one East Texas lease. The water is first circled around the pit through the trough. This aerates the water and permits the ferric oxides to precipitate

SUMMARY OF COST ESTIMATES FOR THREE DIFFERENT PLANS OF REINJECTING SALT WATER TO THE EAST TEXAS WOODBINE SAND

Item—	Plan A	Plan B	Plan C
New wells	23 outside 5 inside	7 outside 30 inside	34 outside 5 inside
Gathering lines, (ft.)	641,440	533,030	918,850
Cost of lines	$271,080	$224,780	$388,780
Pressure lines, (ft.)	129,535	54,020	190,475
Cost of lines	$153,330	$59,310	$225,600
Injection well interconnection (outside wells only), (ft.)	78,660	23,940	116,280
Cost of lines	$95,174	$28,966	$140,692
Subtotal, new pipe, (ft.)	849,635	610,990	1,226,605
Cost of pipe	$519,584	$313,056	$757,072
Pump stations	24	12	35
Cost of stations	$112,002	$54,478	$163,856
Subtotal, gathering system cost	$631,586	$367,534	$918,928
Plant cost	$509,500	$568,000	$718,500
Cost of injection wells	437,500	463,500	619,000
Cost of expansion of present units	120,000	120,000	.....
Subtotal, new cost	$1,698,586	$1,519,034	$2,256,428
Estimated value of present injection system	$1,250,000	$1,250,000	.....
Total cost	$2,948,586	$2,769,034	$2,256,428
Above estimates made using combination wood-fiber-tar paper pipe and asbestos-cement pipe. If asbestos-cement pipe is used throughout add:	$358,740	$298,135	$514,445
Grand total cost	$3,307,740	$3,067,169	$2,770,873

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There are some jobs so tough that only the Big Boss himself can put them across and that goes for the job of keeping the gum all out of certain kinds of cracked gasoline

Now comes the Captain to handle such cases He excels at all kinds of inhibiting jobs Tough ones are his special dish (not copper dish) His name is U. O. P. Inhibitor No. 5

The Captain is powerful, and he's tough Water can't liquidate him, caustic can't poison him

The Chemical Cop, U. O. P. Inhibitor No. 1, protects blends containing much straight-run as well as many straight cracked products He's now cheaper than ever

The Chemical Sergeant, U. O. P. Inhibitor No. 4, has still more authority in gumbug prevention

Together they are safeguarding millions of barrels of gasoline a year from gum formation and octane loss—they are in the army, too

But for the hardest cases call in the Captain

We believe he is the best inhibitor you can buy

Try him—free—in your own gasoline and find out

We'll gladly abide by the result

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Speakers table at the annual meeting of the San Joaquin Valley Oil Producers Association, held at Bakersfield, Calif., last week. The men are: Thomas McManus, A. A. Jergins, Angus Crites, John R. Quinn, Gov. Sam Jones of Louisiana, Dana Hogan, E. E. Pyles, Claude Pearson, Fred Owen, Capt. C. C. Spicer and R. A. Broomfield, Jr.

Federal Policing Not Wanted, California Operators Told

By L. P. STOCKMAN

BAKERSFIELD, Calif., Dec. 4.—Sam Jones, governor of Louisiana, speaking to an overflow audience of California oil operators, received a vociferous burst of applause when he told those present that, "We don't want any federal policing of the oil business and we are not going to have any if we can help it. For one thing, we can do the job better ourselves. Therefore, I say to you that any improvement you make in conservation practice and the elimination of waste helps us; just as any we make in Louisiana helps you. There is a vast mutuality of interest in the proper use of our oil reserves. The oil-producing states of the Union can put their own house in order, without the aid of Uncle Sam's cops."

The meeting addressed by Governor Jones was the annual meeting of the San Joaquin Valley Oil Producers Association, which, because of the prominence of the guest speaker, was thrown open to all operators of the state. The attendance greatly exceeded expectations as many came from all parts of the state, independent operators and executives of large companies sitting side by side to hear the governor's message. At the business session of the association, Dana Hogan, president; Allen A. Jergins, vice president; Thomas W. McManus, secretary-treasurer; E. E. Pyles, vice president Hancock Oil Co.; R. A. Broomfield, vice president Barnsdall Oil Co., and W. M. Keck, Jr., vice president of Superior Oil Co., were reelected directors of the association for the forthcoming year. In addition to reelecting incumbent directors the association also elected to the directorate Harry F. Owen, representing the Berry Interests, and Claude Pearson, pioneer operator. Due to the press of business the directors postponed election of executive officers until a later date, but it is safe to assume that the present officers will be retained for another year.

Mr. Pyles Makes Plea

E. E. Pyles, who is chairman of the production committee for District 5, and ex officio member of the newly created Petroleum Industry Council for National Defense, told the meeting "I hope that while I am in Washington the conservation plan for the producing division of the petroleum industry for District 5 will be approved, so that I can bring it back with me. If that comes about, the whole oil industry of the state, and any others interested, will be invited to a meeting in Los Angeles at the earliest possible moment, and the program fully explained." The plan, worked out by the production committee for District 5 at Petroleum Coordinator Ickes' request, was submitted to his office for approval approximately 2 weeks ago, with the request that action be taken on it as soon as possible. Mr. Pyles and Dana Hogan indicated their intention of flying to Washington to attend the December 8 meeting of the Petroleum Industry Council and will be joined there by A. L. Weil, chairman of the fifth area for the coordinator who left several days ago by rail.

Governor Jones brought out a number of interesting things in connection with Louisiana's conservation program which was particularly apropos in view of California's pending conservation plan for the production division. He indicated, too, that "While I am here I want to learn all I can about your conservation practice, and perhaps from you I can get ideas and suggestions that will enable us to improve the methods now in force. Act 157 of 1940 strengthened our conservation laws to take care of changing conditions in the state and gave authority to the Department of Conservation to cause the unitization of property, so as to eliminate the drilling of unnecessary wells, and resulted in orderly drilling programs which has the effect of conserving reservoir energy. Under this act, not only individual tracts, but whole pools may be unitized, and this has resulted in the establishment of recycling projects where oil and distillate are produced and the gas returned to the ground for future use."

The governor also pointed out that there are six recycling and repressuring plants in operation and three more under consideration or in the process of being constructed. Operating plants and costs were indicated as Tepetate, $200,000; Gillis, $300,000; Ville Platte, $500,000; Cotton Valley, $2,250,000; Lake Mongoulois, $300,000; South Jennings, $500,000. Plants under construction or under consideration are at Bateman Lake, Erath and North Tepetate. This development is of special interest because of unitization of operations in the Paloma field of Kern County by Western Gulf Oil Co., Texas Co., and Ohio Oil Co. The Paloma distillate field is expected to become the largest field of its kind when fully developed as potentially proved acreage already greatly exceeds the largest distillate field in the country. Whether the Paloma distillate field will be developed entirely as a unit operation remains to be seen. Under present conditions all unitization work must be on a voluntary basis.

Reviews Louisiana Statute

With respect to the Interstate Oil Compact, another controversial subject with California operators, Governor Jones declared: "I think my pride is pardonable in the fact that the model statute adopted by the oil compact commission for the standardization of conservation practice in all the producing states, is the same act of our legislature which we passed last year, and whose general pattern I am outlining tonight. Production in Louisiana is going up. When I took office, daily production was around 250,000 bbl. and now daily production is around 350,000 bbl. This was done without depletion of our reserves; in fact, it was done by increasing our reserves. We were fifth in 1939, but now we are third."

In the afternoon, preceding the evening dinner, San Joaquin Valley operators held a session in the Kern County Court House discussing priorities and the proper method to be employed in securing priorities. Clyde Thomas, Los Angeles representative of the priorities division, attended and explained the procedure and answered numerous questions. It was brought out that many of the smaller San Joaquin Valley operators are unfamiliar with the priorities set up but must take action soon as drilling and production equipment is becoming difficult to secure. It was suggested that serious thought be given to the possibility of establishing a divisional office in Bakersfield or a branch office reporting to the Los Angeles headquarters.

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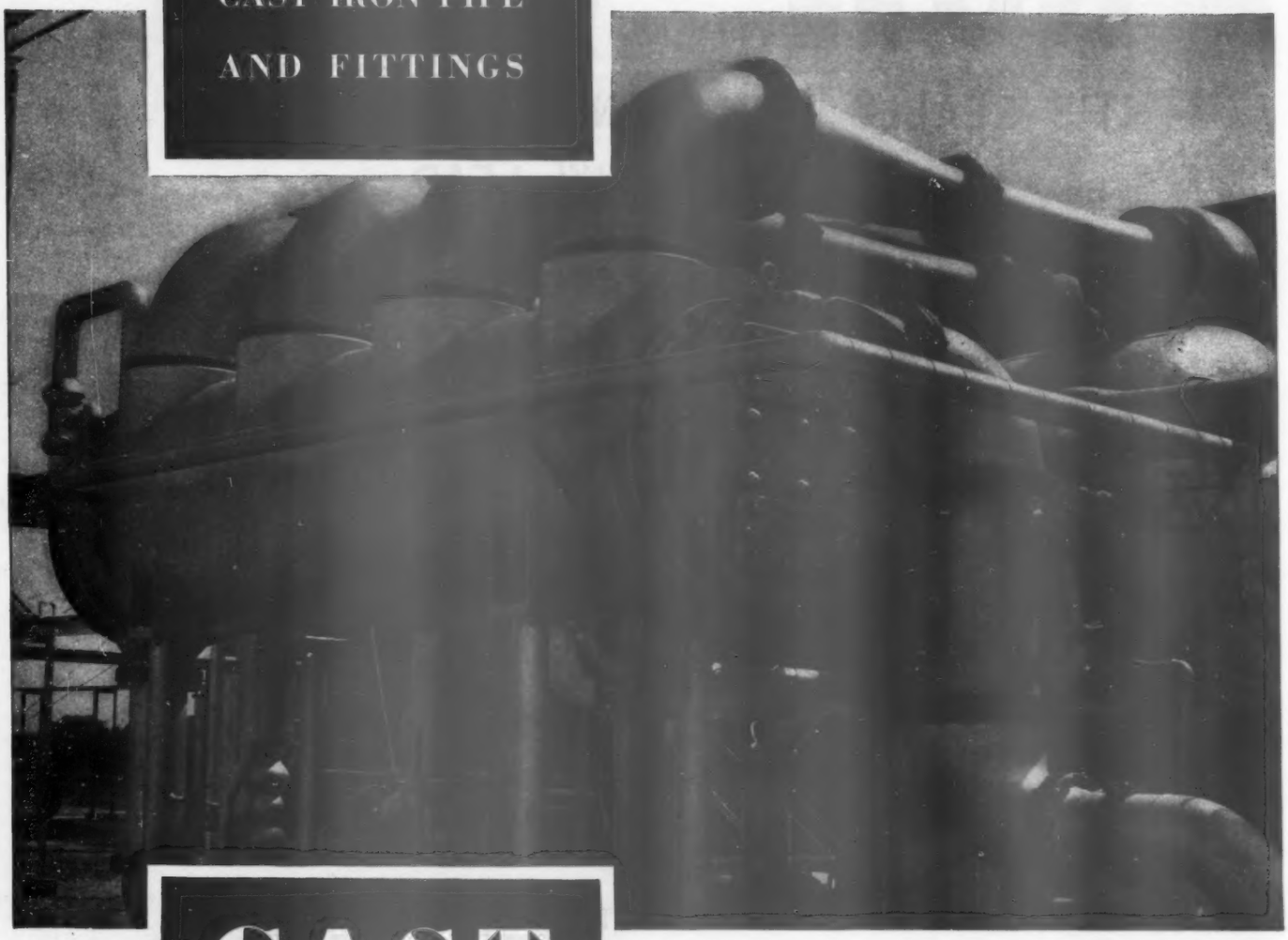

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New Tax Provisions Discussed At Mid-Continent Meeting

FORT WORTH, Tex., Dec. 9.—Discussion of changes in excess-profits and income-tax laws made during the past sessions of state and federal legislatures consumed most of the general and group sessions of the standing tax committees of the Mid-Continent Oil and Gas Association at their seventh annual joint meeting held here December 4-6. Sharing interest of the meeting, which was attended by some 275 tax specialists, were proposed changes in the federal social-security-tax program; ad valorem taxes also frequently entered into the discussion.

In the opening session, Gerald Gordon, secretary of Associated Industries of Kansas, Topeka, Kans., pointed out that we are now approaching the period when the plan of "social-security taxes for social-security purposes" is being pushed far into the background and in its stead we are being sold a program of "social security for defense." He felt taxes necessary for defense should be levied as such, and not cloaked under the guise of social security. He likewise felt the idea of increasing social-security taxes to prevent inflation was a fallacy.

"These taxes will certainly be passed on whenever and wherever possible and if a 1, 2 or 5 per cent tax is applied to wages, the worker can reliably be expected to demand at least a 5 or 10 per cent increase in wages. Thus the vicious spiral of inflation continues upward."

Several proposed changes in the social-security program were discussed by Mr. Gordon. He pointed out that Secretary Morgenthau has recommended to the House ways and means committee that instead of waiting until 1943, the 2 per cent tax levy for social security be made effective immediately; also that the secretary advocates the levy of an employes' tax of 1 per cent under the unemployment-tax section of the Social Security Act. Another sweeping recommendation made by the secretary, Mr. Gordon stated, proposes a gross income tax of 15 per cent on 1942 wages and income. The proposal carries no social-security benefits but is designed "to mop up loose change in the American pocketbook" and so to prevent inflation. Summing up the various proposed taxes, he said that they totaled in excess of 25 per cent.

Opening address of the meeting was given by J. C. Hunter, Abilene, Tex., president of the association. He pointed out that the Government continues to increase the oil industry's tax burden and at the same time took upon itself the right to regulate prices and refuse price increases necessary to meet the higher tax burdens.

"What Oil Taxes Mean to Texas and the South-West" was the subject discussed by Arch Rowan, Rowan Oil Co., Fort Worth, in the Thursday morning session. The increased taxes passed by the Texas Legislature, amounting to over $10,000,000, has raised the annual state and local tax bill of Texas oil producers to more than $54,000,000, he stated. This figure did not include state and local taxes levied upon other branches of the industry, such as refining, pipe-line and marketing operations, nor did it include gasoline taxes paid by the public or any federal taxes.

Texas, Oklahoma, Kansas, Louisiana, Arkansas and New Mexico will have a combined oil production this year of about 900,000,000 bbl., Mr. Rowan said. State and local taxes levied on oil production and the oil-producing operations of these respective states will bring a combined tax revenue this year of nearly $88,000,000. Texas alone, with a production of some 490,000,000 bbl. and a tax rate averaging slightly over 11 cents per barrel, will provide over $55,000,000, or 62 per cent of the taxes yielded by these six oil states, he pointed out.

"Where state and local taxes of Texas oil producers in 1935 amounted to over $29,000,000, they now total over $54,000,000 a year. Thus, while our tax rates have been increased about 45 per cent since 1935, the total state and local tax revenues collected from Texas oil producers has shown an increase of about 90 per cent. The fact that state and local tax revenue from Texas oil has increased twice as fast as the tax rates should make it evident to even the most skeptical advocates of higher tax rates that continued expansion of the Texas oil industry assures an automatic gain in tax revenue."

H. F. See of Atlantic Refining Co., Dallas, Tex., general chairman of the standing committee on federal income and excise taxation, and H. D. Mahin, Phillips Petroleum Co., Bartlesville, Okla., general vice chairman of the group

In the Thursday afternoon and most of the Friday sessions, the standing committee on state and local taxation and the standing committee on federal income and excise taxation met separately and heard a great number of addresses dealing with the more complex phases of taxation. On Friday afternoon, reports of the various committees were heard. Meeting place for the 1942 convention was selected as San Antonio.

Elect Officers and Committees

H. F. See, Atlantic Refining Co., Dallas, Tex., was reelected general chairman, and Hilary D. Mahin, Phillips Petroleum Co., Bartlesville, Okla., was reelected vice chairman of the standing committee on federal income and excise taxation. A. J. Wells, Carter Oil Co., Tulsa, was elected general chairman of the state and local taxation group to succeed John Hammerman of Gulf Oil Corp., Houston. A. D. Nelson, Magnolia Petroleum Co., Dallas, was named vice chairman, succeeding Mr. Wells.

Other members of the executive committee on federal income and excise taxation chosen for the coming year are: W. Leo Austin, Mid-Continent Petroleum Corp., Tulsa; W. H. Cleveland, Tide Water Associated Oil Co., Houston; E. C. Seymour, Magnolia Petroleum Co., Dallas; F. B. Plank, Cities Service Oil Co., Bartlesville; M. J. Lasseigne, Arkansas Natural Gas Corp., Shreveport, La.; J. E. Bounds, Gulf Oil Corp., Tulsa; Gay Carroll, Humble Oil & Refining Co., Houston; L. S. Collins, Carter Oil Co., Tulsa; V. G. Gillingham, Texas Co., Houston; S. M. Greenidge, Texas Pacific Coal & Oil Co., Fort Worth; E. F. Brite, Skelly Oil Co., Tulsa; F. P. Hagaman, Standard Oil Co. of Louisiana, Baton Rouge, La.; T. H. Marshall, Anderson-Prichard Oil Corp., Oklahoma City; O. W. Meyers, Sinclair Prairie Oil Co., Tulsa; R. V. Miller, Shell Oil Co., Inc., Houston; F. J. Blaise, Pure Oil Co., Chicago; George Brabson, Ohio Oil Co., Findlay, Ohio; and E. V. Potter, Amerada Petroleum Corp., New York.

Steering-committee chairmen for the standing committee on federal income and excise taxation were elected as follows: T. H. Marshall, on federal income tax; T. J. Reilly, on capital stock and declared-value excess-profits tax; W. Leo Austin, on excess-profits tax; J. E. Moss, Texas Co., Houston, on pipe-line-transportation taxes; S. M. Greenidge, on federal excise taxes; W. A. Hensley, Phillips Petroleum Co., Bartlesville, on Oklahoma income tax; George R. Blake, Kanotex Refining Co., Arkansas City, Kans., on Kansas income tax; J. A. Galbraith, Stanolind Oil & Gas Co., Tulsa, on New Mexico income tax; and M. J. Lasseigne, on Louisiana-Arkansas income tax.

Other members chosen for the standing committee on state and local taxation were: Leo Meyer, Mid-Continent Petroleum Corp., Tulsa, chairmen of Oklahoma steering committee; Marshall Edwards, Skelly Oil Co., Tulsa, chairman for Kansas; Frank Abbot, Texas Co., Houston, chairman for Texas; J. G. Martel, Gulf Oil Corp., Houston, for Arkansas-Louisiana; F. N. Shriver, Shell Oil Co., Inc., Houston, for New Mexico; John W. Herlitz, Humble Oil & Refining Co., Houston, for Mississippi-Alabama-Georgia-Florida; F. J. Collins, Cities Service Oil Co., Bartlesville, chairman of the outside states ad valorem tax committee; J. W. Elder, Ohio Oil Co., Findlay, Illinois-Indiana-Kentucky steering committee, and John P. Morgan, Sun Oil Co., Dallas, chairman of outside states excise-tax steering committee.

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Government Will Be Represented at Southeastern Line Dedication

The system of Southeastern Pipe Line Co. for the transportation of refined products will be dedicated on December 19. At the ceremonies at the Chattahoochee terminal near Atlanta, Ga., speakers for the occasion will include Ralph K. Davies, deputy petroleum coordinator, Sen. Walter F. George and Rep. William P. Cole.

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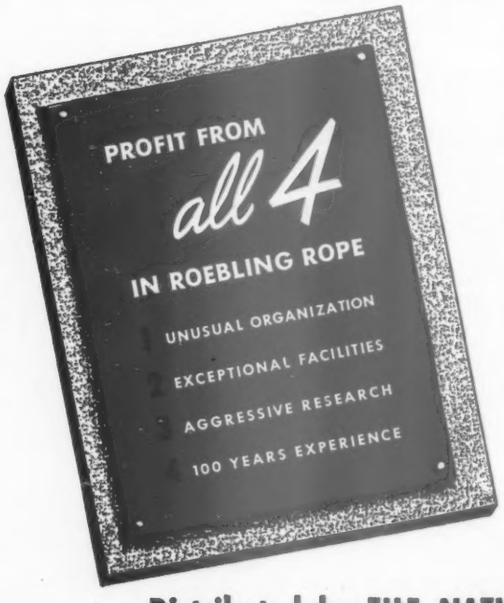

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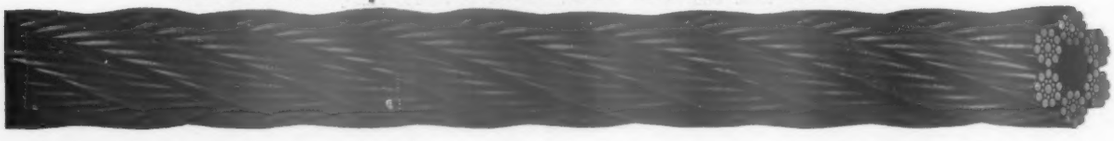

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Refinery Expansion

Refiners Asked to Use Lower Base Stocks for Producing Nonmilitary Aviation Fuels

WASHINGTON, D. C., Dec. 8. — Production of all grades of aviation gasoline of 85-octane number or less through the addition of tetraethyl lead to a clear gasoline base stock having an octane number not greater than 67, was ordered late last week in a formal recommendation to refiners, signed by Deputy Petroleum Coordinator Ralph K. Davies.

Effect of this step, taken in an attempt to boost production of 100-octane aviation fuel for military use, Mr. Davies said, will be to free the better base stocks for use only in the manufacture of 100-octane or 91-octane aviation gasoline, both of which are vital military fuels.

He pointed out that a considerable quantity of the better stocks, and particularly 73-octane (untreated), are being used now in the production of aviation gasoline used by small planes and having little significance in the defense effort. The needs for this type of use, he said, can be met by using lead in place of components necessary for 100-octane manufacture.

The recommendation is in the form of a supplement to an earlier proposal in which the coordinator's office asked the industry to cease the use of certain vitally essential blending agents of a petroleum origin for other than the manufacture of 100-octane aviation gasoline.

Meanwhile, the OPC has scheduled a conference with representatives of additive manufacturers on December 10, to discuss their requirements for scarce materials used in the manufacture of their products. Those invited include: Lubri-Zol Corp., Standard Oil Co. of New Jersey, Monsanto Chemical Co., Alox Corp., Frank Harris Floyd, Inc., Standard Oil Co. of California, Socony-Vacuum Oil Co., Inc., Union Oil Co., Tide Water Associated Oil Co., H. C. Mougy, General Motors Corp., and C. G. A. Rosen, Caterpillar Tractor Co.

New Addition Planned At Lake Charles Refinery

BATON ROUGE, La.—A new $375,000 addition to the Continental Oil Co. refinery at Lake Charles, La., allowing it to step up aviation-gasoline production was announced by Gov. Sam Jones. The company's application for a 10-year tax exemption for the addition will be placed before the state Board of Commerce and Industry.

The company's previous investment at Lake Charles was estimated at $4,000,000 and the addition was said in the application to insure increased production of high-octane aviation gasoline at the plant from 18,000 to 24,000 bbl. a month. Additional quantities of isopentane, used in making aviation gas, will be made available to other refineries.

Standard of Indiana Perfects New Aviation Fuel Process

Development of a new process for aviation gasoline manufacture called "naphtha isomerization" was announced last week by Standard Oil Co. (Indiana). The process was developed at the Whiting, Ind., refinery and the company statement announcing completion of the development work said the process will probably be known popularly as the "Isomate" method.

Modern 100-octane gasoline is made by blending special synthetic hydrocarbons known as "alkylate" and "isooctane" with "isopentane" obtained from natural gas plus special refined naphthas from crude oil. Up to now it has taken about 65 per cent of synthetic hydrocarbons and isopentane with 35 per cent of naphthas to make the final product.

The process developed at Standard's laboratories converts ordinary naphthas into an improved product for blending with synthetics to make the 100-octane fuel. The quantity of synthetics can consequently be reduced to 40 per cent and use of isopentane can be eliminated. Obviously this increases the amount of 100-octane fuel that can be made from a given amount of synthetics by over 50 per cent.

"This development is important to national defense since the United States total 100-octane capacity is much less than anticipated demands by the Army and Navy," Edward G. Seubert, president of the company, stated in announcing the process. "Since the development has just been completed, it would not ordinarily be made available to the industry at large until Standard had constructed units in its own refineries. However, in view of the potential importance of the process to national defense, Standard has notified the Office of Petroleum Coordinator of its willingness to make the process immediately available to the industry. To facilitate this program we have appointed the M. W. Kellogg Co. as an agent for the licensing of the process."

Natural Gas

Panhandle Eastern Rate Hearing Is Postponed by FPC

The Federal Power Commission announced today its order postponing until 9:45 a.m., December 18, 1941, the hearing previously scheduled for December 8 on rate agreements between Panhandle Eastern Pipe Line Co., Michigan Gas Transmission Corp., and Northern Indiana Public Service Co. which, it is alleged by the Public Service Commission of Indiana in a petition filed with the FPC, may adversely affect rates to natural gas consumers in Fort Wayne, Bluffton, Huntington, Decatur, Columbia City, Preble, Ossian and South Whitley, Ind.

The hearing will be held in Room 353, Federal Building, Fort Wayne, Ind.

Harry Ells Made Chairman Of N.G.A.A. Program Committee

Harry Ells, general manager of natural-gasoline operations, Cities Service Oil Co., Bartlesville, Okla., has been appointed chairman of the 1942 program committee for the twenty-first annual convention of the Natural Gasoline Association of America, according to Ray E. Miller, Hanlon-Buchanan, Inc., president of the association. The meeting is scheduled for May 13-15 in the Mayo Hotel, Tulsa.

Other members of the committee are: H. H. Beeson, Sabine Valley Gasoline Co., Inc., Shreveport, La.; E. E. DeBack, Chicago Corp., Corpus Christi, Tex.; D. M. Wolfe, Standard Oil of California, San Francisco, Calif.; S. F. Mauney, Jr., Carter Oil Co., Tulsa; G. W. McCullough, Phillips Petroleum Co., Bartlesville; and R. A. Carter, Continental Oil Co., Ponca City, Okla.

Aside from the usual interesting technical program which characterizes the working conventions of the association, an unusual feature being planned is the celebration of the twenty-first birthday of the organization in a "Coming of Age" banquet. Entirely on the serious side, plans for the event include the presentation of national authorities in discussions of national-defense programs affecting the products and operations of the natural-gasoline and distillate industries.

Natural Gasoline

Liquefied-Petroleum-Gas Yield in California Raised

Production of liquefied petroleum gases in California increased more than 4,000,000 gal. in October, a reflection of the addition of four new companies to the list of manufacturers of these products. There were 20 companies manufacturing liquefied petroleum gases in California in October.

Production by 88 natural-gasoline plants operating in California totaled 1,192,897 bbl. in October, an increase of 32,536 bbl. over September. Gas treated during the month totaled 32,255,530,000 cu. ft., compared with 31,139,160,000 cu. ft. in the previous month.

CALIFORNIA NATURAL-GASOLINE-PLANT OPERATIONS, OCTOBER 1941

	Natural gasoline produced (gal.)	Plants operating	
		Number	Dly. cap. (M.c.f.)
San Joaquin Valley—			
Belridge	2,169,187	3	210,000
Elk Hills			
Kettleman Hills	10,173,882	7	535,000
Midway-Sunset	1,790,636	5	40,500
Mountain View	223,765	2	30,000
Miscellaneous	2,824,775	8	138,300
Coastal district—			
Elwood	452,451	3	29,500
Santa Maria	564,253	3	9,500
Ventura Avenue	5,035,619	5	155,000
Miscellaneous	865,834	6	74,500
Los Angeles Basin—			
Brea-Olinda-Coyote	1,574,288	5	41,000
Dominguez	1,969,811	2	69,000
Huntington Beach	2,764,023	5	83,500
Long Beach	7,384,756	9	137,500
Montebello	1,788,191	2	105,000
Richfield	610,744	2	35,000
Rosecrans	1,263,785	4	54,000
Santa Fe Springs	4,647,281	6	175,000
Torrance	600,727	3	14,500
Miscellaneous	3,397,653	8	136,000
Total (all fields)	50,101,661	88	2,072,800

Distribution

	Gallons	Gallons
Stocks beginning of month	1,716,539	
Production during month	50,101,661	
Delivered to refineries		49,990,040
Delivered to jobbers, brokers, or blenders		
Blended at plants for production of motor fuel		15,712
Losses		46,110
Stocks end of month		1,766,338
Total	51,818,200	51,818,200

Distribution of Liquefied Petroleum Gases, October 1941
(Thousands of gallons)

Number of producing companies	20	
Stocks beginning of month		4,491
Production during month:		
At natural gasoline plants	7,354	
At refineries	7,450	
Total production		14,804
Total		19,295
Total demand		11,348
Trans. to gasoline or natural gasoline		3,237
Losses		398
Stocks end of month		4,312
Total		19,295

Suman Honored at Dinner by Gulf Coast Chapter, A.I.M.E.

HOUSTON, Tex., Dec. 5.—John R. Suman, vice president of the Humble Oil & Refining Co. and president of the American Institute of Mining and Metallurgical Engineers, was honored here tonight at a dinner given by the Gulf Coast chapter of the institute. Two hundred members of the organization and guests attended.

Prof. L. C. Uren, of University of California, who was an undergraduate of that school with Mr. Suman, paid tribute to the numerous accomplishments of the honored guest who is now bringing to a close his presidency of the A.I.M.E. Other speakers included W. B. Heroy, Pilgrim Exploration Co.; Chester Naramore, secretary of the A.I.M.E. Petroleum Division; Prof. H. H. Power, University of Texas; Prof. Harold Vance, Texas A. & M. College; Julian Fohs, independent operator; W. S. Morris, East Texas Engineering Association, and Alexander Deussen of Houston.

Mr. Suman reviewed his activities as president of the institute which included visits to a large number of sections in all parts of the United States. A moving picture of the producing operations of the Humble company was shown. J. U. Teague, chairman of the Gulf Coast chapter, presided at the dinner.

DEATHS

JOHN B. TAGGERT, 70, former resident of Tulsa, and well known in Mid-Continent and eastern oil circles, died Monday at his home in Tidioute, Pa., from a heart ailment. Mr. Taggert was in the drilling contracting business in Tulsa until he left 15 years ago to return to his old home in Tidioute. Since that time he has been engaged in the oil business with Amos Klinger & Sons. The widow, two sons and two daughters survive.

GIFFORD C. PARKER, 20, son of G. C. Parker, who heads the Parker Drilling Co. at Tulsa, was killed Monday in an automobile accident near Smithville, Tex. He was a student at University of Texas, and was en route from Houston to Austin when the crash occurred.

GEORGE B. SLEMAKER, 80, veteran oil man of Tulsa, died last week in a Tulsa hospital after a 3-month illness. Mr. Slemaker was a pioneer in the oil business and a retired independent producer and broker. When the oil business moved west across Pennsylvania into West Virginia he went along, and was active in production and development in West Virginia fields. Later he moved on into Illinois and into Oklahoma. The widow, two sons and a daughter survive.

JOHN LEE JOINER, oil man who was associated with his father, C. M. Joiner, when the latter discovered the East Texas oil field, died suddenly in a Durant, Okla., hotel, while he was on a business trip. Mr. Joiner was a native of Alabama, and had resided in Tennessee, Oklahoma and California before making his home in Dallas, Tex., in 1928. The widow survives.

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THE MARKETS*

CRUDE OIL: Crude markets throughout the country are firm. Many refiners are seeking additional supplies. Various inducements are being offered producers by purchasers in an effort to increase oil runs. Crude buyers are moving promptly to post prices and build connecting lines to all new fields.

REFINERY PRODUCTS: Gasoline-market conditions are tight throughout the eastern part of the country. Consumption continues to exceed expectations, rising above the rate of increase in the earlier part of the year during the past few weeks. Light fuel oil is more active on the Gulf Coast and prices have been reasonably well supported in the East Coast district despite moderate winter temperatures.

TANK WAGON AND POSTED DEALER: Practically no changes are reported in this phase of petroleum markets owing to the influence of the Office of Price Administration. The depressed dealer market in Peoria, Ill., was returned to normal during the latter part of November. Marketers are awaiting results of conferences in Washington, D. C., this week to indicate future regulations on the quality.

FINANCIAL: Part of the slump suffered by oil stocks last week was overcome at the close but selling pressure returned this week as a result of the war. Average of 30 representative oil stocks for the week ended December 6: High, 27.46; low, 25.94; close, 27.07. Week ended November 29: High, 27.17; low, 26.10; close, 26.69.

*Details in the Market Section.

Effect of Defense Activity Is Chief Topic at Power Meeting

(Continued from Page 32)

leum Co., Bartlesville, Okla.; "New Uses of Electric Service," by B. J. Martin, of Electrical Industry, Chicago, and "Supplying Defense Needs," by G. R. Prout of General Electric Co., Schenectady, N. Y. At the association dinner on Thursday night, J. B. Thomas, of Texas Electric Service Co., Fort Worth, Tex., was the chief speaker.

New officers elected were: H. E. Roberts, president, succeeding E. L. Robinson of Gulf States Utilities Co., Beaumont; K. K. Kreamer, Houston Lighting & Power Co., Houston, vice president, succeeding Mr. Roberts, and P. M. Cordell of Texas Electric Service Co., Fort Worth, secretary-treasurer, succeeding Mr. Kreamer. Named as new directors were President Roberts; Secretary Cordell; E. A. Armstrong; H. C. LeVois, Gulf States Utilities Co., Beaumont; A. M. Young, Central Illinois Public Service Co., Springfield, Ill., and Glenn Coleman, Public Service Co. of Oklahoma, Tulsa. At the association dinner retiring President Robinson was presented with an award for his services during the past year, and Mr. Armstrong, president prior to Mr. Robinson, likewise was presented a similar award due to an error in the previous year's award.

●

Men Injured in Refinery Explosion All Expected to Recover

The several men who were injured in the series of blasts that cost the lives of five men at the Okmulgee, Okla., refinery of Phillips Petroleum Co., are recovering from their burns, and no more deaths are expected to occur. R. O. Evans, superintendent of the refinery, estimated the damage to property at around $75,000. Crews have cleared away the debris, and the plant is in operation, though it will take several weeks to repair all the damage.

The five men who lost their lives in the explosion and fire are C. J. Steighner, 39; John Rogers, 46; Hippolyte Decobert, 38; Lewis Poge, 37, and James D. Hawk, 40. Funeral services were held last week for the victims.

CALENDAR

December

SOUTH DAKOTA INDEPENDENT OIL MEN'S ASSOCIATION, twenty-third annual convention, Aberdeen Civic Auditorium, Aberdeen, S. D., December 11.

INTERSTATE OIL COMPACT COMMISSION, Biltmore Hotel, Oklahoma City, Okla., December 19-20.

1942

January

SOCIETY OF AUTOMOTIVE ENGINEERS, annual meeting and engineering display, Book Cadillac Hotel, Detroit, Mich., January 12-16.

February

AMERICAN PETROLEUM INSTITUTE, Division of Production, southwestern district, spring meeting, Adolphus Hotel, Dallas, Tex., February 26-27.

NORTH TEXAS OIL AND GAS ASSOCIATION, Wichita Falls, Tex., February 28.

March

AMERICAN SOCIETY FOR TESTING MATERIALS, committee week and spring meeting, Cleveland, Ohio, March 2-5.

INDIANA INDEPENDENT PETROLEUM ASSOCIATION, spring convention and refiners and suppliers exhibit, Hotel Severin, Indianapolis, Ind., March 3-5.

WISCONSIN PETROLEUM ASSOCIATION, annual convention and equipment show, Schroeder Hotel, Milwaukee, Wis., March 18-20.

WESTERN PETROLEUM REFINERS ASSOCIATION, thirtieth annual meeting, New Orleans, La., St. Charles Hotel, March 23-25.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, spring meeting, Houston, Tex., March 23-25.

April

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Cincinnati, Ohio, April 15-17.

SOUTHWESTERN GAS-MEASUREMENT SHORT COURSE, Norman, Okla., April 21-23.

AMERICAN PETROLEUM INSTITUTE, eastern district, Division of Production, William Penn Hotel, Pittsburgh, Pa., April 9-10.

NATIONAL PETROLEUM ASSOCIATION, thirty-ninth semiannual meeting, Cleveland, Ohio, April 16-17, 1942.

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, twenty-seventh annual meeting, Cosmopolitan Hotel, Denver, Colo., April 21-24.

PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, Washington-Youree Hotel, Shreveport, La., April 22-24.

May

NATURAL GASOLINE ASSOCIATION OF AMERICA, Mayo Hotel, May 13-15.

June

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, semiannual meeting, Cleveland, Ohio, June 8-11.

AMERICAN SOCIETY OF TESTING MATERIALS, Chalfonte-Haddon Hall, Atlantic City, N. J., June 22-26.

October

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, fall meeting, Rochester, N. Y., October 12-14.

AMERICAN PETROLEUM INSTITUTE, twenty-third annual meeting, Stevens Hotel, Chicago, Ill., November 9-13.

Use of salvage material to solve the problems presented by townsite drilling is shown in this view of a mud system at Oklahoma City. Old separators with the insides removed and an opening cut down one side are laid on sills to make leakproof mud pits

ENGINEERING & OPERATION

In This Section

DECEMBER 11, 1941

PLANTATION LINE DEMONSTRATES CONSTRUCTION EFFICIENCY
By Paul Reed ..... Page 44
The longest pipe line built this year is the Plantation Pipe Line Co.'s system of more than 1,260 miles for transporting refined products to the area between Baton Rouge, La., and Greensboro, N. C. According to the schedule the main trunk line of the system will be fluid tested December 15. The principal features of construction of the line are discussed.

PUMP USED WITH CABLE-TOOL COMPLETIONS ..... Page 46

LOCO HILLS PRESSURE-MAINTENANCE PROJECT PLACED IN OPERATION
By D. H. Stormont ..... Page 48
New Mexico's first pressure-maintenance operation was started during October of this year following organization of the Loco Hills Pressure Maintenance Association, Inc. Background of the project and the facilities for compressing 4,000,000 cu. ft. daily to 1,000 lb. per sq. in. and injecting it in 11 input wells are described.

SULFUR LIMITS IN GASOLINE
By C. D. Lowry, Jr., and Gustav Egloff ..... Page 52
The advisability of restricting sulfur content in gasoline to less than 0.1 per cent is examined and the question raised as to whether the sulfur specifications could not be safely discarded. Elimination of the harmful sulfur compounds and free sulfur is supported but the efforts to get rid of the harmless compounds are shown to be unnecessary and economically burdensome.

MECHANISM OF FLOW OF FLUIDS THROUGH ORIFICES
By J. T. Cortelyou ..... Page 56
This article is a brief of the work done by Julius M. Naiman titled "Summary of Results of Data of an Investigation of the Mechanism of Flow of Fluid Through Orifices." It discusses the three basic laws and the four additional concepts which are presumed to be sufficient to solve the problem.

QUESTIONS ON TECHNOLOGY—By W. L. Nelson, Technical Editor ..... Page 64

OPERATING IDEAS ..... Page 65

REFINERY GADGETS ..... Page 66

Plantation Line Demonstrates Construction Efficiency

By PAUL REED

THE Plantation Pipe Line Co.'s project which is being constructed during the last half of this year is the most important undertaking of the industry in a construction season which has been unusually active. The significance of the line as a transportation medium for refined products was indicated in an article published in The Oil and Gas Journal, October 26, 1941, Page 10. The information presented in this article covers some of the principal features of construction.

The project is one of the longest ever built at one time. It is the first petroleum pipe line to be built eastward from the Mississippi River through the South to Atlantic seaboard states. The route of the main line and laterals traverses sections of nearly all of the southeastern states. The terrain includes river bottoms, swamps, mountains, and the average agricultural and rolling wooded country which is typical of large areas of this country. In Alabama the most varied conditions are encountered; in addition to crossing country with pronounced natural obstacles such as swamps and mountains, the line threads its way through districts where quarrying and mining are carried on extensively to supply the steel industry of Birmingham. The line starts from an elevation of 78 ft. at the Baton Rouge terminal; the highest terminal is at Bremen, Ga., where the elevation is 1,360 ft.; the terminus of the line, at Greensboro, N. C., is at an elevation of 920 ft.

The line was planned originally as a transportation system for serving southeastern states effectively under peacetime conditions. The system will prove to be even more valuable to the country under war conditions when large quantities of refined products must be sent to areas containing training centers and defense industries. Built as it is under national-emergency conditions, it demonstrates what the pipe-line industry can do in rapidly building arteries from Mississippi Valley points to eastern seaboard states. Completing the line on January 1 to meet the requirements of the company's schedule, will mean that the line will be finished in less than 5 months from the time pipe deliveries began.

The system will have more than 1,260 miles of line with 17 terminals and 16 pump stations, representing altogether an investment of $20,000,000 which does not include investment in terminal facilities provided by shippers.

The line will consist of approximately 432 miles of 12-in. between Baton Rouge and Bremen; 356 miles of 10-in. from Bremen to Greensboro; 196 miles of 8-in. for lateral to Chattanooga and Knoxville, Tenn,; and 225 miles of 4-in. for laterals in Alabama and Georgia. In addition, four parallel 12-in. lines 5.81 miles in length are to be laid from dock facilities on the Mississippi River to the first main-line pump station near Baton Rouge.

At present 15 main-line gangs are working on the construction of this line which has been contracted as follows: Latex Construction Co. and H. C. Price Co., across Louisiana and Mississippi; Oklahoma Contracting Co., across Alabama; Williams Brothers Corp., Georgia, South Carolina and North Carolina, as well as a lateral in Tennessee. This firm is also excavating at the Bremen tank farm. The laterals to Birmingham, Ala.; Montgomery, Ala.; Columbus, Ga., and Macon, Ga., have been contracted by Ray Littrell. This firm has built tank grades at Baton Rouge and Helena, Ala.

Aerial surveys were used for locating the route of the line which has been planned to serve a great area of the country which is valuable due to its agriculture, industries, and natural resources.

Because of the national-defense emergency the building of the line had to be delayed until arrangements could be made for providing pipe for the Plantation project as well as the Portland-Montreal crude-oil pipe line. Pipe used for the Plantation line is Grade B, A.P.I., made according to the following specifications:

Diameter (o.d., ins.)	Weight (lb. per ft.)	Wall thickness (in.)
12¾	49.56	0.375
10¾	40.48	.365
8⅝	28.55	.322
4½	10.79	.237

Right: One method of bending pipe used in laying the Plantation line. Extensive use was made of a bending shoe placed near the base of the boom

Below: One contractor has used a rooter successfully for tearing the ground ahead of the ditching machine. Its use speeds up ditching operations

For welding 12-in. pipe welding rods of the following sizes are used: First bead, $\frac{7}{32}$ in.; second bead, ¼ in.; and third bead, $\frac{5}{32}$ in. Stovepiping is the prevailing method used by the contractors.

The line is coated for about 30 per cent of its length. The sections to be coated were selected by engineers who studied corrosion conditions of the ground. Most of the pipe protection consists of an application of hot asphalt enamel wrapped with asbestos felt applied by the efficient methods which have become established in pipe-line practice for coating in the field. At river crossings and other potentially high-corrosive areas the pipe is doubly reinforced by applying an extra coating of enamel and wrapping.

At the eastern end of the line protection is fur-

nished by an asphalt-mastic coating which is applied by special equipment installed at a central yard in the Baton Rouge area. After the pipe is cleaned by steel grit forced against the pipe surface, the pipe goes to a furnace where it is heated by oil burners to a temperature of 160° F. The primer has greater affinity for pipe which is hot and dry. Primer is applied with spray guns. After the primer is dry, asphalt-mastic at a temperature of 350° F. is applied by special equipment which provides for coating the pipe evenly at a predetermined thickness that is controlled by a die attached to a nozzle, completely surrounding the pipe, through which the hot coating material is pumped. Coated pipe is whitewashed before removal to cooling racks.

The pipe is left bare for a distance of 9 in. at the ends of each joint until the line has been welded. These bare places are covered by asphalt-mastic coating material prepared in a portable kettle. A special form furnishes means for applying this coating under pressure maintained for a hour before it is released and the form is removed. Pipe protected by this type of coating is commonly cold bent in the field.

In crossing mountains in Alabama the line was laid on slopes which were so steep that Oklahoma Contracting Co. found it necessary to hold tractor equipment with a cable.

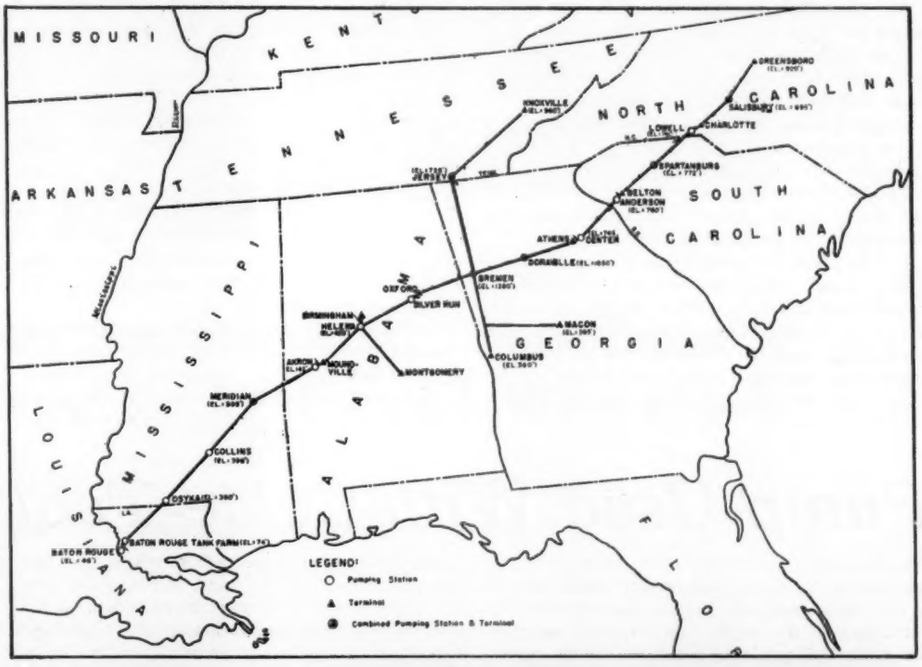
Although sections of the line contracted by Williams Brothers Corp. traverse mountains in Tennessee and North and South Carolina, it is stated that part of the route through Georgia presents more difficulties.

Improvements in Construction Equipment

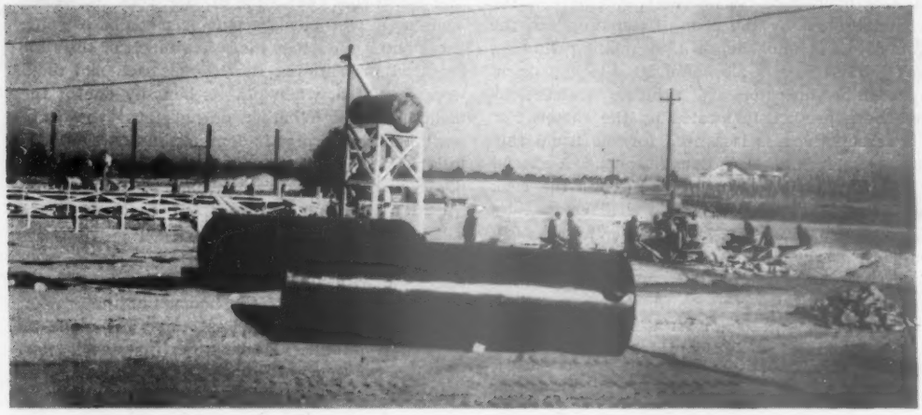
Certain innovations are coming into pipe-line construction this year which may be observed on this project. Williams Brothers Corp. has a rooter precede the ditcher. Rooters were first used for pipe-line construction 2 years ago when this organization demonstrated the value of this unique equipment during the construction of the Utah-Wyoming line. By having a rooter break ground ahead of the ditcher it is possible to speed up ditching operations considerably. Not only is the ground broken by the prong extending into the ground to full ditch depth, thus making ditching easier, but there is also assurance to the ditching-machine operator that hidden obstructions have been previously located by the rooter. For this reason there is less need for the usual caution regarding uncertain dangers ahead. A special type of three-pronged rooter known as the rock rooter is being utilized. This was developed by Williams Brothers Corp. last summer particularly for work on the Portland-Montreal pipe line. Two of these rock rooters are assigned to the Plantation job in North and South Carolina, where granite is encountered. Furthermore, the plans of this company call for doing part of the ditching in the Carolinas with a new type of plow specially developed by this organization for the requirements of pipe-line work. Most of the pipe gangs have tractors equipped with shoes attached to the tractor at the base of the boom. Each organization builds shoes of this kind according to its own designs. There is some difference of opinion regarding the value of this ingenious device. Some tractor operators and foremen dislike them and claim that they slow up the work. However, some men, who have become accustomed to using these shoes, find that they save much of the time required for running the tractor back and forth over the ditch, when pipe is bent by one of the usual methods. Whether or not these shoes are used, bending of pipe is done rapidly on the Plantation line with modern equipment. Twelve-inch pipe was bent at the rate of nearly a joint a minute at a point on the line near Bremen, where construction operations were observed while obtaining material for this article. The tractor was equipped with one of these bending shoes installed at the base of the boom, but the tractor operator did not use it. Fast time was made in spite of crabbing which required that the tractor travel more than 100 ft. each time it carried a joint. It is believed that half the tractor operators having this bending-shoe equipment make use of it.

Tractor Shovels

In excavating for tank foundations and building fire walls, tractor shovels are utilized to advantage which are of a type that combines in one



Right: Route of Plantation Pipe Line which will be capable of supplying half of the gasoline consumed in the area that it serves. Below, left: Angle dozer moving stump while clearing right-of-way. Below, right: Tractor shovel removing shale in a tough, hilly section. Equipment of this type has proved useful in clearing right-of-way as well as for grading at terminal tank farms



Construction of pumping station at Bremen, Ga. In the foreground are the "hay tanks" to be filled with excelsior which will catch the products of corrosion that must be removed from a pipe line transporting gasoline. The elevated tank is for handling water required for construction operations. In the background, foundations are being built for station equipment

machine the features of a shovel, loader, scraper, bull dozer, angle dozer.

The Plantation system will serve 17 terminal points and have 16 pumping stations; 14 of these will be main-line stations; in addition there will be a lateral-line pumping station near Chattanooga and a river station near Baton Rouge, La.

Shippers using the line will provide tankage at delivery points. Each of the owners of the line (Standard Oil Co. of New Jersey, Standard Oil Co. of Kentucky, and Shell Oil Co., Inc.) is making provisions for delivery and loading facilities at points where products are to be received.

The line will be operated as a closed system without surge tanks. Products will be measured by meters where they are put in and taken out of the line. Duplicate meters and calibration equipment owned by Plantation will be installed wherever measuring is to be done. Meters will be rotary type and will be furnished by several manufacturers.

The only tankage owned by Plantation Pipe Line Co. will be located at receiving and diversion points. This consists of 1,220,000-bbl. storage and receiving facilities at Baton Rouge, to accommodate tanker and barge shipments as well as deliveries from the nearby Standard Oil Co. of Louisiana refinery and Shell Oil Co., Inc., refinery at Norco, La.; 104,000 bbl. at Helena, Ala., a diversion point for laterals to Birmingham and Montgomery, Ala.; 523,000 bbl. at Bremen, a diversion point from which shipments will be made north through a 196-mile 8-in. lateral to Chattanooga and Knoxville, and south through a 168-mile 4-in. lateral to Columbus and Macon, as well as east on the 356-mile 10-in. main line through South Carolina to Greensboro.

All stations are equipped with direct-connected motor-driven centrifugal pumps arranged for series or single-unit operation. There will be two units at most stations. A complete standby unit including pump and motor will be held at Baton Rouge so that it will be available for shipment to any station on the line where a unit needs to be replaced. A typical station on the 12-in. main line is equipped with two 600-hp. electric motors, each of which is direct-connected to a three-stage centrifugal pump.

At the Bremen station there will be four units; two units will pump through the 10-in. main line. One unit will pump through the 4-in. line to Macon and Columbus, one unit will serve the 8-in. line to Knoxville, and two units will serve the 10-in. line to Greensboro. The line has been designed to operate at pressures up to 950 lb. The 12-in. main line from Baton Rouge to Bremen will be capable of pumping 60,000 bbl. daily. This can be increased to 90,000 bbl. by doubling the number of pump stations. The Bremen-Greensboro section will be capable of delivering 42,500 bbl. daily, according to present plans.

Construction of stations has been contracted as follows: Graver Tank & Manufacturing Co., Baton Rouge, and Jersey, Tenn., stations; Foundation Co. of Mississippi, Osyka, Meridian, and Collins, Miss., stations; Ralph A. Smallman Co., Akron, Helena, and Silver Run, Ala., stations; C. M. Guest & Sons, Bremen, Center, and Doraville, Ga., Anderson and Spartanburg, S. C., stations; Southeastern Construction Co., Lowell and Salisbury, N. C., stations.

Since this article is concerned more with the construction of the line than with the future operation of the stations, it is premature to discuss features of pumping facilities. However, it can be mentioned that station buildings have been planned so that there is no direct connection between the control room and the pump room. For occasions when trouble may occur, provision is made for disconnecting current 200 ft. from the station. Dispatching of refined products will be done from the headquarters offices at Atlanta. Dispatchers' orders will be transmitted to all stations by teletypewriters which will make it possible for all stations simultaneously to receive a copy of each order sent out by the dispatcher.

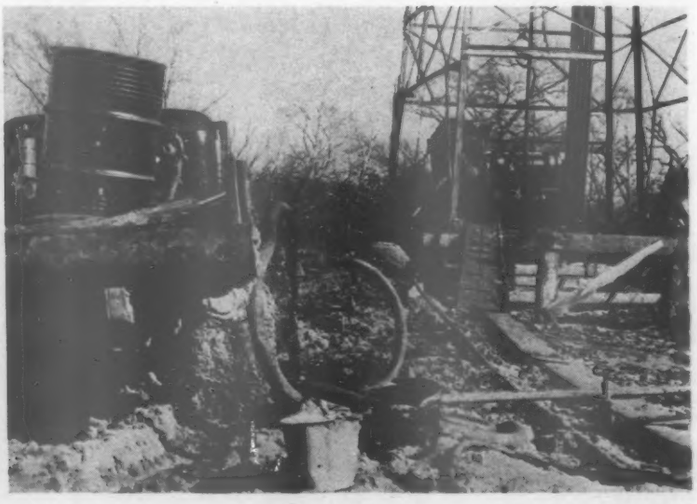
Pump Used With Cable-Tool Completion

CABLE tools are widely used for the completion of wells in low-pressure sands and in recent years have been improved greatly for this work. One of the major improvements has been the design of spudding machines along rotary hoist lines. Another rotary method, a circulating pump was recently adopted in the Dill, Oklahoma, pool for use with spudding machines.

Instead of using water while drilling the pay formation, the Cromwell sand, one operator uses oil. Reason for this change in procedure is the loss of water into the formation; tests showed that the water went into the sand at a rate of 20 bbl. per hour. The oil does not enter the sand so readily and its effects are not so harmful.

A small duplex power pump is used to circulate the oil into the hole. The pump is mounted on a truck in the position normally occupied by the winch. A power take-off from the drive shaft allows truck engine to be used for driving pump.

The pump is also used for picking up oil from sumps at tank batteries and transferring oil around leases where no pump is regularly installed.



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★ It pays to use preformed wire rope. Being preformed this "rope" lasts longer—cuts the number of machine shutdowns—steadies production. It is easier, faster, safer to handle. It saves both time and money.

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Loco Hills Pressure-Maintenance Project Placed in Operation

By D. H. STORMONT

Pressure maintenance is being applied on a major scale by the operators in the Loco Hills field of Eddy County, New Mexico. The project is a cooperative effort which includes practically all of the lease owners in the pool.

A gathering system and a compressor plant handle approximately 4,000,000 cu. ft. per day from the 165 producing wells and return it to the 2,800-ft. pay level through 11 input wells. Injection pressure is around 1,000 lb. per sq. in.

The article also discusses the plan of operation as well as the mechanical facilities

FIRST pressure-maintenance operations in New Mexico were started during the latter part of October in the Loco Hills field east of Artesia in northeastern Eddy County. The project was placed in operation by the Loco Hills Pressure Maintenance Association, Inc., and involves return of gas from 165 producers to the 2,800-ft.-pay horizon through 11 input wells. Through maintenance of the field's reservoir pressure it is estimated that ultimate recovery of oil per acre will be increased from about 4,500 bbl. to 9,000-10,000 bbl. In addition to this higher yield of oil the project will result in greatly postponing the time when lifting equipment must be installed.

The Loco Hills association was formed by 45 of the field's operators, all but two of whom have entered into the program. With the exception of these operators' 240 acres and 6 wells, all productive acreage, about 7,000 acres, is involved in the program. The association was formed as a nonprofit corporation to comply with the laws of New Mexico and at the same time to have the benefits of the corporation laws. Of the 9,840 acres involved in the project about 70 per cent is federal land and most of the remainder is state owned. This small diversification of fee ownership greatly facilitated formation of the pressure-maintenance program. The association also had very close and constructive cooperation from the Oil Conservation Commission of New Mexico and from the U. S. Geological Survey, which administers and supervises the oil production of federal lands.

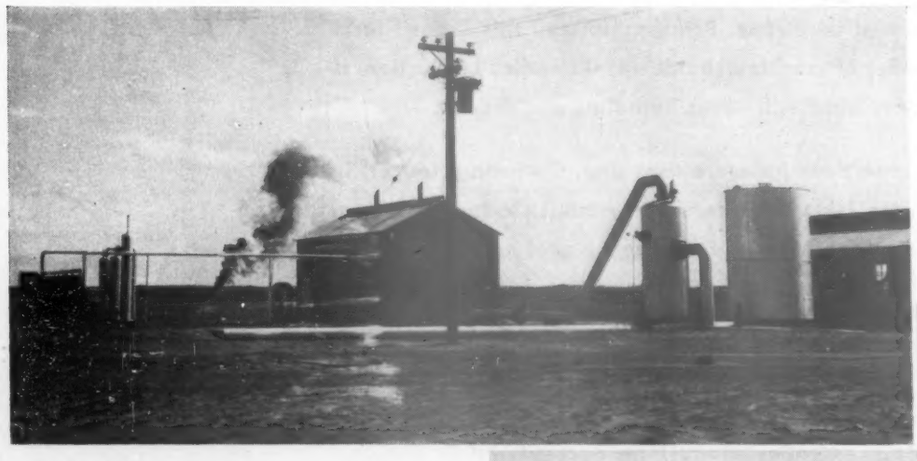
All casinghead gas except that required for lease operations has been unitized and is turned over to the plant's gas-gathering system, with the operator receiving no pay for the gas. To finance the compression plant, gas-gathering and distributing systems and operating expenses, each operator pays 5 cents (at present) into the association fund for each barrel of oil produced. Of this 5 cents, 4 cents go toward retirement of a bank loan that financed the project and 1 cent is applied to operating expenses.

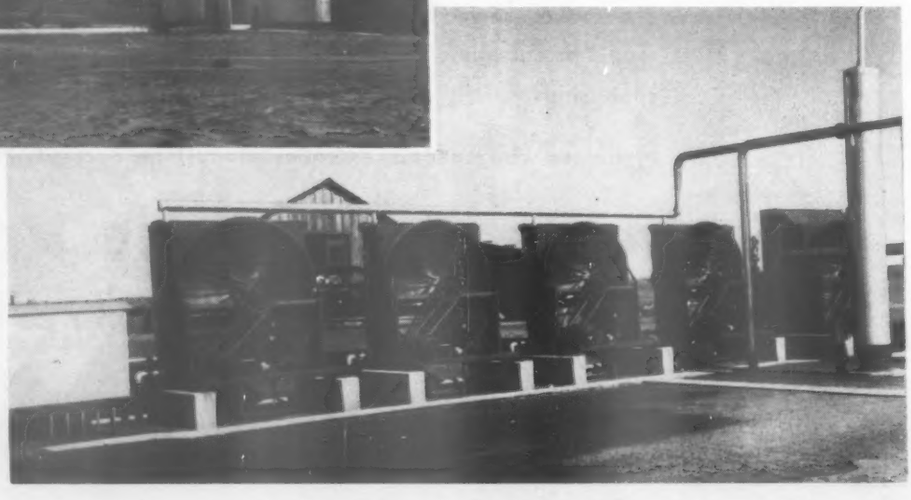
In regard to the deduction of 5 cents per barrel, however, it has been found that 1 cent per barrel on the basis of approximately 6,000 bbl. per day from the membership will not pay the operating expenses. Therefore it has been necessary to increase the levy an additional 1 cent per barrel. This 6 cents per barrel is deducted by the purchaser and is remitted directly to the lending bank, which in turn refunds the 2 cents per barrel to the association for operating expenses. Officers and a nine-member board of directors elected from among the field's operators or representatives of operators, conduct the association's activities.

Plant Facilities

Gas from the various leases is gathered by a 4, 6, 8, 10, and 12-in. gathering system (see map) and brought into the plant by three main lines. After passing through a scrubber and recording meter, the gas passes to a header to which the low sides of two 625-hp. angle-type compressors are connected. The gas is boosted from about atmospheric to 35 lb. pressure in the low stage, to 275 lb. in the intermediate stage and to 1,000 lb. in the high side. Interstage cooling is employed between the first two stages of compression, the low-stage discharge gas being lowered from a discharge temperature of 170° to 78° F. and the intermediate-stage discharge is intercooled from 200° to 88° F. The high-stage gas is discharged at 280° F. and is turned directly into the injection system without cooling.

About 4,000,000 cu. ft. of gas is being handled daily by the plant at present, from which is being extracted some 1,000 gal. of raw gasoline. This gasoline is knocked out in the first and second stages of compression in conventional accumulator tanks after the gas intercooling. Loco Hills





Left: General view of the 4,000,000-cu. ft. compressor plant showing the radiator-type coolers, raw-gasoline accumulators and cooling-water vent column, compressor building and electric-generating plant. The plant is to be enlarged to 8,000,000-cu. ft. capacity and facilities added for stripping and stabilizing natural gasoline. Below: Battery of radiator coolers used for cooling of engine-jacket water and lubricating oil and interstage cooling of gas

gas has a high percentage of gasoline fractions, a typical analysis being as follows:

Component—	Mol %
Acid gas	1.00
Methane	60.34
Ethane	17.83
Propane	11.84
Butanes	5.54
Pentanes	3.43
Total	100.00

The gas contains an average of about 600 grains (370 to 950) of hydrogen sulfide per 100 cu. ft.

Since some 8,000,000 to 9,000,000 cu. ft. of gas are available, immediate enlargement of the plant to handle this volume is planned. The plant has sufficient cooling capacity to handle this load so that addition of two more 625-hp. compressor units will be the main item. Due to the large volume of natural gasoline, however, it is planned to install facilities for additional stripping of the raw gas, and for stabilizing the raw product into finished grades of natural. Gas analyses indicate that the enlarged plant will produce approximately 18,000 gal. of finished natural daily.

Lube Oil and Water Radiator-Cooled

Cooling of the gas between compression stages and of the engine-compressor lubricating oil and jacket water is accomplished in five radiator sections. Cooling of the gas is done in one large fan-cooled radiator, powered by a 15-hp. squirrel-cage splashproof motor operating at 1,160 r.p.m. The four units cooling the jacket water and engine lubricating oil are driven by 10-hp. 440-volt motors of the same type.

The jacket water is circulated through a closed system, being pumped through the radiator sections and into a combination surge-vent column from which it flows to the engines. Make-up water required is almost negligible. The plant's water requirements must be trucked in, and the water that is available contains a high percentage of dissolved solids. Thus it is very important that water loss be held to a minimum, which is being accomplished by the completely closed radiator-type cooling system. The radiators are set so that they face the prevailing south wind, but in the event of the wind changing to the north provision is made for quickly reversing the motors' direction of drive.

The plant's electrical load is supplied by a 75-kw., 480-volt, three-phase, 60-cycle generator driven by a 140-hp., 600 r.p.m. gas engine.

Gas Injection

The high-pressure gas is returned to 11 injection wells through 4, 3, and 2-in. lines that parallel, as far as possible, the field gas-gathering system. At present 3,000,000 to 3,750,000 cu. ft. of gas is being injected daily as it is desired to build up the input volumes slowly. Some trouble has been experienced with gas hydrates freezing in the lines. Drips and heaters have been installed to temporarily solve this problem until facilities for more complete stripping of the gas are available. In a few months it is planned to have injection volumes increased to around 8,000,000 cu. ft. daily.

The 11 converted oil producers used for gas intake were selected by the association engineering committee after carefully taking into consideration a well's location, productivity, conditions of hole and many other factors. The allowable of the wells converted into input wells is produced by other wells on the basic lease. Each intake well was cleaned to bottom, prior to starting gas injection. In some wells the gas is returned through the tubing string, some with and some without packers, and in a few gas is injected through the casing.

Field Data

The Loco Hills field was discovered in January 1939 and though some drilling continues on inside leases the productive limits have been fairly well established on all sides. Development has been one well to 40 acres. Production throughout most of the field is from a 2,800-ft. pay. However, on the southwest side production is from a sand slightly lower than the main pay. Original bottom-hole pressure varied from 600 to 1,000 lb., with the average estimated at 900 lb. The average reservoir pressure at first fell off rapidly, but during the past 8 months, with daily oil withdrawals ranging from 6,000 to 7,500 bbl., the decline has been about 8 lb. per month. In August, when the most recent survey was run, the average pressure was about 661 lb. The average gas-oil ratio early in 1940 was about 800:1, but since then it has increased to the present ratio of 1,500 cu. ft. per barrel.

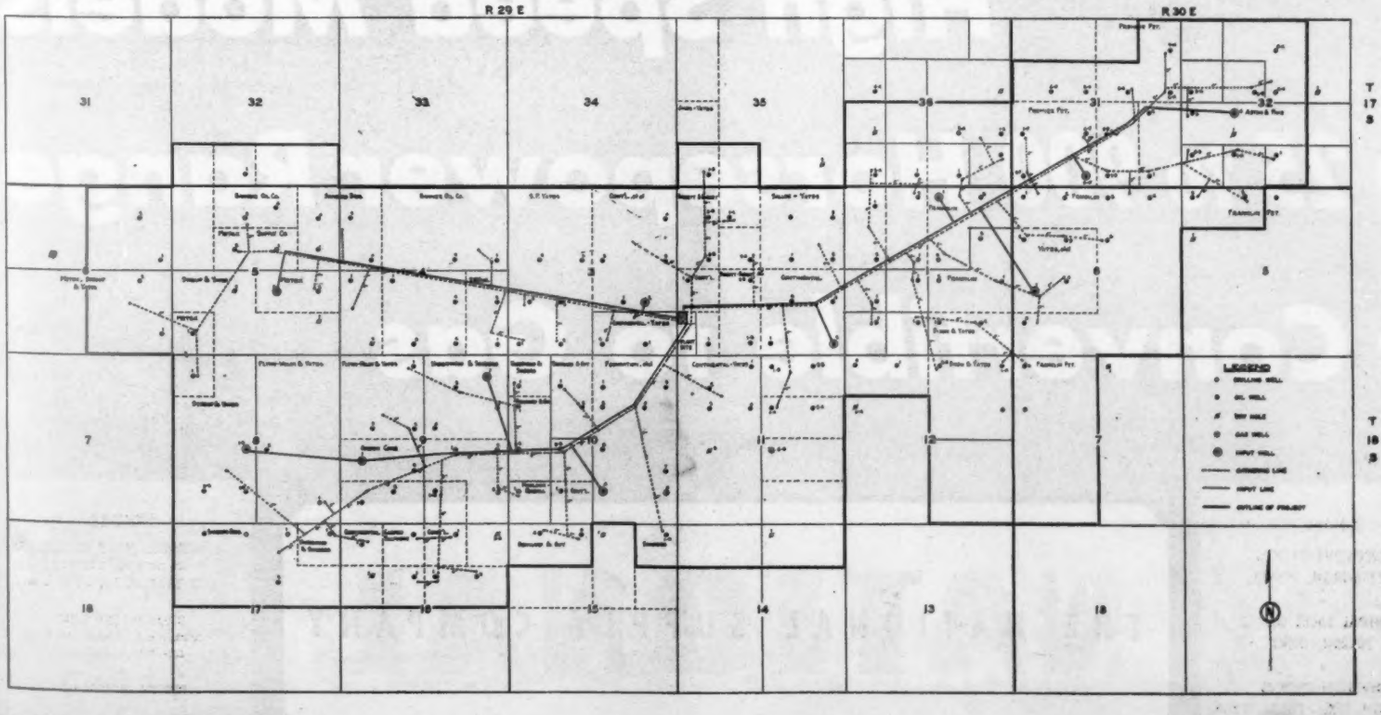
The field lies on the south flank of the area's main known structural feature, a lime high plunging from the west through the Maljamar area and on eastward. On the north edge of the field there is a gradual cementation of the main pay as the sand grades into lime. Within the field productivity of wells is thought to be determined largely by local sand conditions rather than by structure. Although edge water has been encountered on the southern edge, no active water drive has become apparent and it is thought that oil recovery will be obtained solely by gas drive. No gas cap has developed as yet. Average gas-oil ratios have practically doubled, it is indicated.

Sand Has 20 Per Cent Porosity

The field's main pay averages about 20 ft., with regional dip being to the south and east. Analyses of cores have shown the pay to have a porosity of about 20 per cent, with connate water content ranging from 15 to 25 per cent. Under primary recovery methods it is estimated ultimate oil yield would have been 4,500 bbl. per acre. Under pressure maintenance, however, due to the highly favorable conditions for such operations, it is expected that ultimate recovery will be raised to 9,000-10,000 bbl. per acre.

The repressuring plant and system was designed and supervised by Fred L. Jacobs, formerly consulting engineer of Tulsa but now superintendent for the association; original plans for the project were formulated by C. A. Aston, consulting geologist of Smith, N. M. General contractor was Sam Sanders of Artesia, N. M., and C. A. Meisinger is chief engineer. The association is headed by C. J. Dexter of Artesia, and Fred Brainard of Artesia is secretary-treasurer. Construction of the plant was started early last summer, but progress was greatly hindered by lack of supplies until the project was granted an A-1-a rating by the OPM.

Map of the Loco Hills field showing the gas-gathering system and high-pressure distribution system



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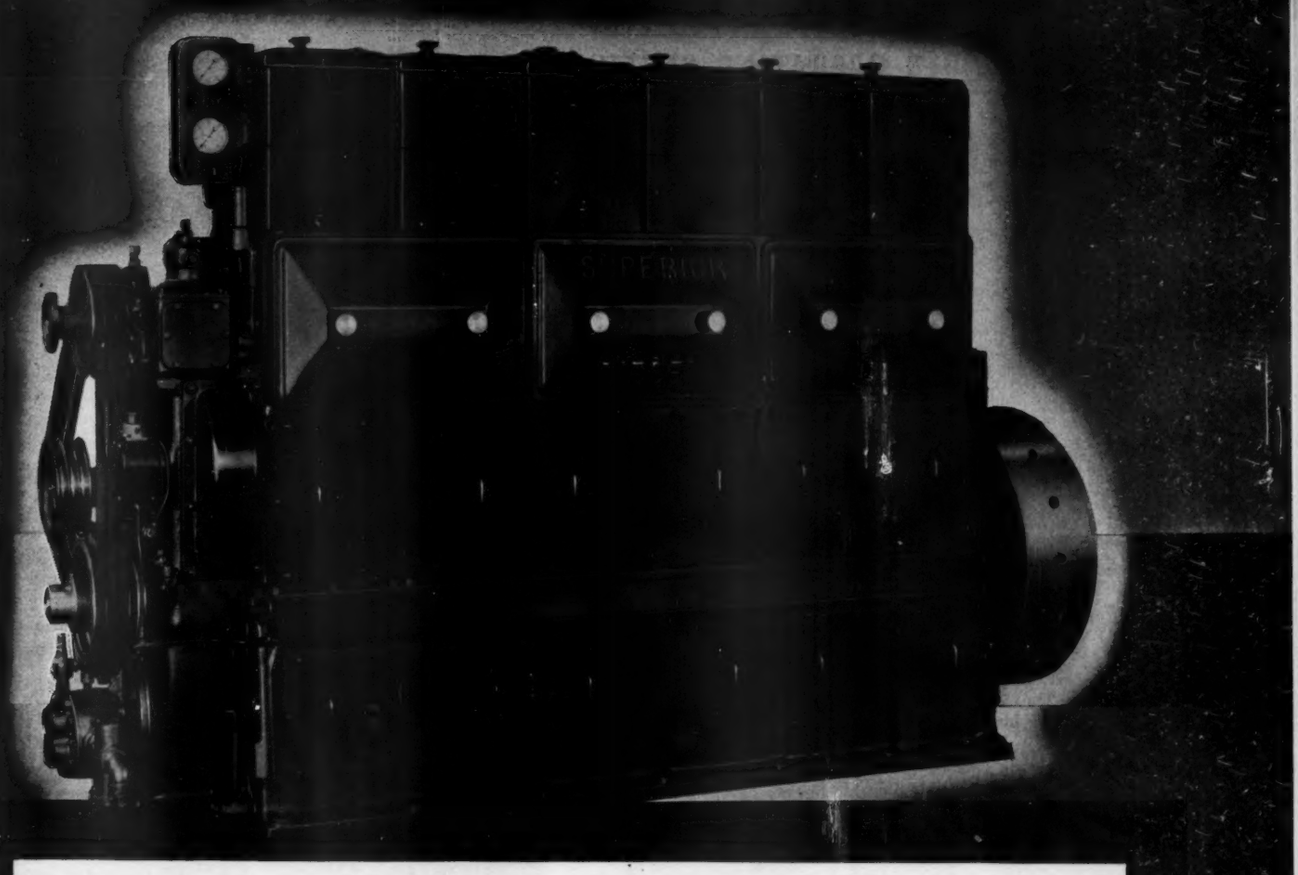

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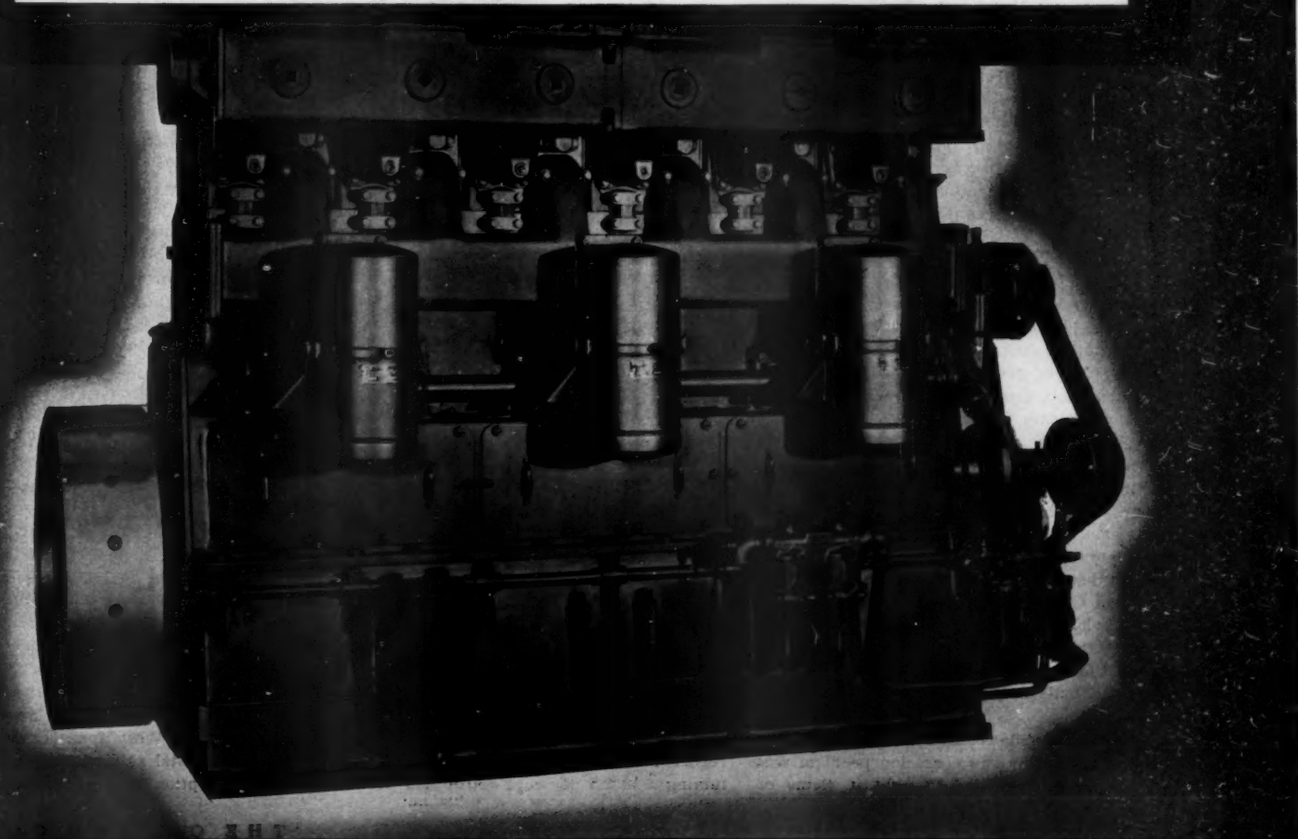


Sulfur Limits in Gasoline

By C. D. LOWRY, JR., and GUSTAV EGLOFF
Universal Oil Products Co., Chicago, Ill.

DURING the past 15 years, many million barrels of gasoline containing 0.2 to 0.5 per cent sulfur have been marketed in western United States. Yet in many portions of the country, a limit of 0.1 per cent is fixed. It may properly be asked, "Is there any justification for this or any other limit of sulfur in gasoline?"

There has been a considerable easing of restrictions. Fourteen states have raised the allowed maximum above 0.1 per cent in recent years.

In some states the federal Government will now accept gasoline containing 0.25 per cent sulfur. In the present emergency, should we not examine the facts to see whether the sulfur specifications cannot safely be eliminated?

The early gasoline produced in the United States, notably those from Pennsylvania, were low in sulfur. They were all straightrun products, as cracking to produce gasoline was not a commercial process. As the petroleum tide of empire swept westward, the crudes discovered contained more and more sulfur and produced gasolines of higher sulfur content, particularly when cracking was employed. Strong antipathy arose, not only because of their higher sulfur content but because they differed in other respects. In color, odor, gravity, and sulfur, the newer gasolines, particularly the cracked products, were different.

In all respects except sulfur, the prejudice has been overcome. No one now cares whether Texas gasoline looks or smells like a Pennsylvania product or has the same density. But the feeling against sulfur dies hard, in spite of the higher octane numbers and, therefore, superior performance which the gasoline from many of these high-sulfur crudes have been shown to have.

In 1918, during the early investigations of the cracking of heavy oils containing high concentrations of sulfur, technologists of this company operated test cars for many thousands of miles on gasoline containing 0.5 per cent sulfur and higher. Careful examination of the engine parts showed practically no corrosion.

Morrell and Egloff[14] pointed out in 1927 that only a small proportion of the oil found in the western states, particularly Texas and California, could be economically refined to the then fashionable figure of 0.1 per cent sulfur.

More Than One Form

In gasoline also, sulfur occurs in more than one form. Sometimes, though rarely, it is present as the free element and this is definitely harmful, as elementary sulfur is corrosive to copper. Sulfur also exists in gasoline as malodorous mercaptans. These, too, are objectionable. But much of the sulfur appears in other forms, such as thiophenes, which do not affect fuel value nor have they been shown to do any harm to a motor under normal conditions of operation.

Every refiner is scrupulously careful to exclude elementary sulfur from his gasoline. No sensible person would leave mercaptans in motor fuel both because of the intolerable odor they impart and their adverse effect on susceptibility to tetraethyl lead. But it is the elimination of sulfur compounds of other types rather than the removal of the really harmful substances which is the difficult and expensive part of refining gasoline.

Oil and automobile companies early became aware that the sulfur and corrosion problem was not as simple as they had thought it. Some of their best men were put to work on research on the problem of corrosion of automobile parts. Their most important conclusions appeared in articles published in 1928 by Diggs[4] of the Standard Oil Co. of Indiana and Mougey[13] of the General Motors Co.

These men demonstrated clearly that:

1. Corrosion was exclusively a cold-weather problem, occurring only when the temperature was below freezing.

2. Corrosion did not occur even in wintertime in cars operated continuously.

3. Corrosion occurred even in cold weather only when the cars were operated intermittently with many stops and starts.

4. Corrosion was due not primarily to sulfur but to water collecting in the crankcase.

5. Severe corrosion occurred when water collected in the crankcase even on low-sulfur fuels. Later work has shown that in the presence of water not only combustion products of sulfur but even carbon dioxide and nitrogen acids, which are inevitable products of combustion, can cause harm to parts of a motor.

6. Corrosion of motors can be prevented by equipping automobiles for the regulation of jacket-water temperature and ventilation of the crankcase, these improvements eliminating the condensation of water.

When Consumption Is Greatest

Reports of the U. S. Weather Bureau have shown that at least 70 per cent of the country's gasoline was sold during months when the mean minimum temperature was 40° or higher. Several crude-oil-producing states, notably California and Texas, which together produce nearly one-half of the country's cracked gasoline, were shown to be above this mean minimum temperature at all the recording stations during every month of the year. Certainly there was no warrant for placing any limit on sulfur in gasoline in these states.

In studying the experience of others in preparation for the earlier paper, we found a great many noteworthy instances of the use of gasolines containing sulfur in high concentrations.

Dr. A. R. Dunstan, famed refining technologist of the Anglo-Iranian Oil Co., which operates the world's largest refinery at Abadan, Iran, visiting the United States in the fall of 1928, gave as his opinion[5] that, outside of free sulfur, hydrogen sulfide and mercaptans, the actual sulfur content of gasoline was nothing to worry about. The National Benzol Association in England[2] made road tests with gasolines containing 0.7 to 0.9 per cent sulfur and on tearing down the cars afterward found "no signs of corrosion."

Mr. Kewley[12] of Shell Co. informed us that in Egypt his company had been marketing gasoline containing 0.3 per cent sulfur and "never had any complaints about sulfur either directly or indirectly." In Esthonia, Mr. Kewley stated, "shale gasoline of 0.4 per cent sulfur was being distributed and seemed to fit the market requirements without any cause for complaint."

A distinguished German authority, Dr. Graefe,[3] reported that in some cases crude lignite oils containing 1 to 2.5 per cent sulfur had been burned in Germany, and no trouble experienced unless water condensed in the engine. Graefe also related the most extreme case of sulfur tolerance of which we have knowledge. He operated his car during the period of inflation in Germany on a marine-engine oil to which 5 per cent of carbon disulfide had been added to increase the ease of starting. Although this mixture contained about 4 per cent sulfur, he said he "could perceive no damage whatsoever to the motor or crankcase."

When we published this information regarding the harmlessness of high-sulfur gasolines in properly constructed motors, Dr. H. E. Howe,[11] editor of Industrial and Engineering Chemistry, official journal of the American Chemical Society, wrote in an editorial that these disclosures should make the tolerance of higher sulfur in gasoline mandatory, to stop waste of our natural resources through excessive refining of motor fuel. It was criminal, he said, to set sulfur specifications so low as to unnecessarily waste an irreplaceable raw material.

No Corrosion in Warm Weather

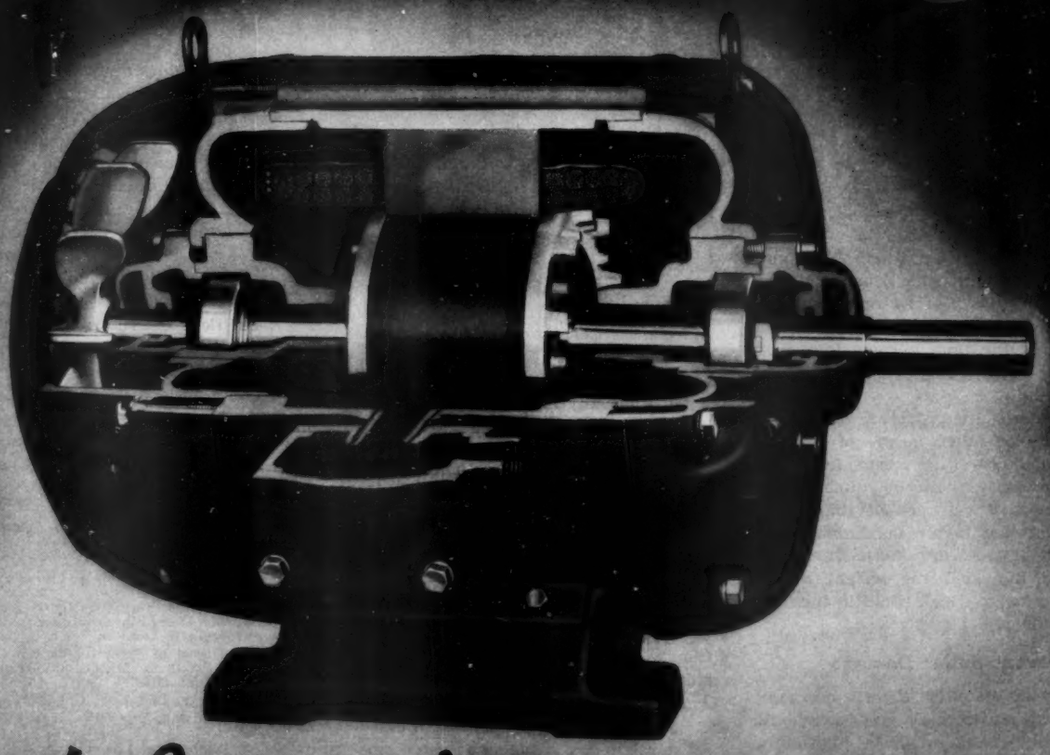
Considering, then, that no gasoline, no matter how high its sulfur content, has been reported to cause corrosion of automobile motors in warm weather, and that even in cold climates high-sulfur fuels are safe to use in cars properly protected to prevent condensation of water, it is pertinent to ask why low sulfur specifications were adopted in the first place, particularly the 0.1 limit of the Federal Specifications Board.

In 1931 when the State of Montana was considering raising the allowable sulfur in gasoline sold in that state, C. W. Gross, supervisor of the Public Service Commission, wrote Dr. C. K. Francis, for many years technical editor of The Oil and Gas Journal, making inquiry on this point. Dr. Francis' reply[9] is most illuminating: "Answering your letter of February 4 concerning the justification for 0.1 per cent total sulfur in motor gasoline, I may say that I was a member of the Advisory Board, Federal Petroleum Products Specifications, about 10 or 12 years ago when the United States Specifications were first published. As I remember the discussions at Washington, 0.1 per cent was adopted because no samples of gasoline examined at that time contained more than this quantity; sweet crudes containing little sulfur were abundant in the eastern and Mid-Continent districts, also the samples containing the larger quantities of sulfur, that is, approaching 0.1 per cent total sulfur, were usually found to be cases of contamination, really caused by oversulfurizing in the sweetening operation. Consequently, 0.1 per cent was thought to be acceptable to both the industry and the public. It was not shown that any quantity exceeding this percentage would be objectionable for any reason. To the best of my recollection 0.1 per cent was chosen quite arbitrarily."

He said further, "It is unfortunate that some of the states have adopted the same specifications without an appreciation of their limitations and an understanding of the possible influence on local supplies. A gasoline containing between 0.3 and 0.7 per cent sulfur is being sold in the United States apparently without complaint, according to reports from California and New England. Gasoline from West Texas crudes contains from 0.16 to 0.30 total sulfur.

"Adoption by the individual states of the fed-

LOUIS ALLIS



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eral specifications for petroleum products is not wise nor advisable."

It is notable that the realization that sulfur restrictions have no secure foundation has found expression in the publications of the American Society for Testing Materials, the authoritative body for preparing methods of testing and writing specifications for products from petroleum and other commodities used in this country. In their latest published gasoline specifications[1] this society states: "The technical data available do not afford an adequate basis for specifying maximum sulfur content."

Amplifying this statement, Dr. T. A. Boyd[7] of General Motors Co., chairman of Committee D-2 of the American Society for Testing Materials, which has control over gasoline, in an official publication of the society has written: "The figure of 0.1 per cent by weight, which has been used rather generally in the past as representing a safe maximum, was not based directly upon comprehensive tests at the time it came into existence, although it was not altogether unsupported by experiment.

"But now that cars are provided with jacket-water thermostats or other means of insuring rapid warmup, and also with means for aiding the removal of condensed water by suitable ventilation of crankcases, it may possibly be that in most cases a somewhat higher maximum sulfur content can be tolerated with safety." Certainly Dr. Boyd would not lend the weight of his authority to any change which could in the least degree harm motor cars.

Can Prevent Sulfur Damage

Combustion experts state that there is no fundamental reason why an automobile engine should be more susceptible to harm from high-sulfur fuel than a diesel engine, provided condensation of water in the crankcase is prevented. The diesel engine is usually operated uninterruptedly for long periods of time, so that there is little chance for condensation of water. The automobile engine often runs intermittently; but with adequate crankcase ventilation, which is now universal, there is no reason to anticipate harm from sulfur. A survey of specifications approved by manufacturers of diesel engines,[10] who would certainly stay on the safe side, showed that they allowed from 0.5 to 2 per cent sulfur, and these seems no reason why limits for gasoline should be lower.

A further noteworthy consideration is that at the time sulfur limits were first set, acid treating was almost universally used to prevent gum formation in gasoline. Since that time, cheaper methods of gum elimination have replaced acid, notably clay treating and application of inhibitors, so that the expensive acid treating is only continued, in many refineries, in order to meet arbitrary sulfur limitations.

The recently published specification for all-purpose gasoline of 80-octane number for the U. S. Army still retains the 0.1 per cent limit. This may have two serious disadvantages: to seriously limit the availability of this fuel, and to encourage the furnishing of leaded straightrun gasolines rather than blends containing considerable proportions of cracked gasoline which would have superior road performance in motor cars.

The most recent motor gasoline survey of the Bureau of Mines shows the sulfur content of gasoline sold in the western part of the United States to be as follows:

Locality	Per cent sulfur in regular-grade gasoline	
	Average	Highest
Southern Rocky Mountain area	0.175	0.348
Los Angeles	0.191	0.31
San Francisco	0.189	0.28
Seattle	0.22	0.33

High-sulfur gasolines have been sold in California for more than 15 years. In July of this year, of 27 regular-grade gasolines used in California, only four contained less than 0.1 per cent sulfur and nearly one-half had over 0.2 per cent. The six samples showing the highest sulfur content were as follows:

Per cent sulfur
0.45
0.37
0.28
0.28
0.27
0.26

The third-grade gasolines contained sulfur in still greater amounts, the six highest figures having:

Per cent sulfur
0.63
0.53
0.45
0.45
0.29
0.29

Have these gasolines done any harm? Maverick and Black,[13] writing in "Science of Petroleum," state: "For many years many West Coast gasolines of unusually high sulfur content have been used in all kinds of climates and temperatures without observing any unusual wear."

We have diligently inquired of companies distributing high-sulfur gasoline in California as to whether any difficulties have been encountered with it. Two replies are particularly worth quoting.

A large distributor states: "We have, for the past 1½ years, marketed our gasoline not to exceed 0.3 per cent sulfur and have to date had no difficulty with corrosion of tanks, feed lines, crankcases, etc."

Another large company assured us: "The general adoption by all our manufacturers of crankcase ventilating systems and water-temperature-control thermostats has so reduced corrosion that it no longer constitutes a problem when fuel of a reasonable sulfur concentration is burned. The permissible upper limit of sulfur has never been definitely determined.

"This company has been marketing gasolines containing up to 0.25 per cent sulfur for a number of years. The territory in which these gasolines have been sold includes a wide variety of climatic conditions but no complaints have been received from users that could be attributed to the sulfur content. Other gasoline manufacturers in the same area have at times marketed fuels containing as much as 0.40 per cent sulfur, and it is our understanding that they have experienced no serious trouble as a result of this policy.

"Considering the problem from another standpoint than that of complaints to the refinery, if engines corrode seriously, then certain parts of those engines must be replaced from time to time. If corrosion should take place due to the effect of combustion products, the parts most affected would be the wrist pins and the exhaust systems. If high-sulfur gasolines caused any increased tendency for corrosion, it would be reflected in a greater movement of replacement wrist pins and mufflers per registered car on the Pacific Coast due to the higher average sulfur content of the gasolines sold in this area. However, manufacturers of these parts have reported that the Pacific Coast shows no tendency to be exceptionally hard on piston pins or mufflers."

Certainly in view of the statement issued by the American Society for Testing Materials, and the long and satisfactory experience in California with high-sulfur fuels, the burden of proof should rest on those who feel that sulfur limitation is a necessity to prove some injury to modern cars from sulfur in gasoline.

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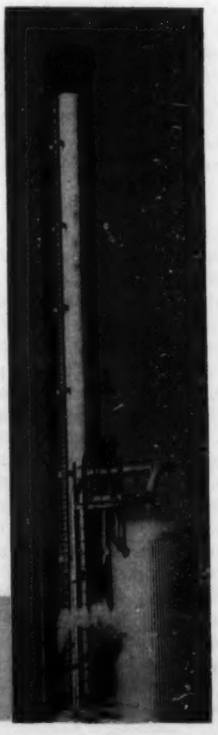

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Mechanism of Flow of Fluids Through Orifices

By J. T. CORTELYOU
Southern California Gas Co.

Many phases of the operation of all branches of the oil industry are concerned with the flow of fluids through pipes and through orifices. The accompanying papers discuss the material presented by Julius M. Naiman, consulting engineer, in his work, "Summary of Results to Date of an Investigation of the Mechanism of Flow of Fluids Through Orifices." The papers were prepared by Mr. Cortelyou and contain the data used for a discussion presented before the Pacific Coast Gas Association meeting in September 1941.

MR. NAIMAN states, "This is a preliminary summary of the investigation of the physical phenomena influencing the direction of flow velocities and pressures during the flow of fluids through the conventional orifices used for the measurement of the flow of fluids through pipes. . . .

"The object of this investigation is to get an insight into the physical details of the flow problem, to evaluate the factors influencing the orifice coefficients and to correlate the formulas thus developed with the standardized orifice coefficients of the A.S.M.E.-A.G.A. Fluid Meter Committee. With such rationalization of the present available experimental data, a sound foundation would be laid for the important subject of flow of fluids through orifices."

There are three natural laws which are used to develop a concept of the mechanics of flow. They are the laws of (1) conservation of energy, (2) flow continuity, and (3) centrifugal force.

The conservation of energy law states that there are several kinds of energy, and that energy is never lost or consumed but is merely changed from one form to another. The two kinds of energy which are pertinent to this problem are kinetic energy, which is proportional to velocity, and potential energy, which is proportional to pressure. Thus, pressure can be converted to velocity, and vice versa. A convenient simile is the conversion of the potential energy in a locked-up spring to kinetic energy when the spring is released and it springs back into its original shape.

2. The flow-continuity law states that the same mass of fluid must pass any cross-section of a closed conduit in any given unit of time. If this were not so, fluid would have to be added to or removed from some opening into the conduit.

3. The law of centrifugal force states that a force is required to change the direction of motion of a moving fluid, which is equal to the mass of the fluid times its velocity squared divided by the radius of curvature of the deflected path.

Four Additional Concepts

These three laws in their elemental form are insufficient to solve the problem of flow through an orifice. Mr. Naiman has developed four additional concepts or formulas which, combined with the three laws just given, are presumed to be sufficient to solve the problem.

In an endeavor to clearly present Mr. Naiman's ideas, the writer has prepared a diagrammatic sketch of an orifice in a pipe line with streamlines of flow. Also a family of normal curves (normal to each streamline) and a family of constant-pressure curves (curves crossing each streamline, at points of equal pressure) are drawn on this sketch. The sketch is the product of the writer, as Mr. Naiman did not include one with his manuscript.

I. The first concept of Mr. Naiman's is the concept of a "pressure field" between the outer streamline, the orifice plate, and the pipe wall. The pressure is presumably built up by moving fluid stopping in front of the orifice plate and having its kinetic (velocity) energy converted to potential (pressure) energy. It is the explanation for each streamline being deflected to the center line of the pipe according to the law of centrifugal force.

It follows from this that there must be a pressure gradient along each normal curve as shown. As the pressure gradient is positive upstream from the orifice and negative downstream, there must be one normal curve with zero pressure gradient. This is the constant-pressure normal curve as shown.

II. The minimum slope of each streamline occurs at the constant-pressure normal curve inasmuch as the streamlines curve inward upstream from this point and outward below this point. From this it can be shown that there is a constant-pressure curve with zero curvature which appears to coincide with the orifice axis.

III. By analyzing the curvature of each streamline it can be shown that the constant-pressure normal curve is, not exactly, but approximately a circular arc through the orifice edge tangent to a slope line expressed by $\sin O = n$ = ratio of orifice diameter to pipe diameter. Also, from this reasoning, it can be shown that the normal curves at the first normal curve (farthest upstream point of streamline curvature) and the vena contracta are straight vertical curves.

IV. One of the most necessary bits of information for solution of this problem is a knowledge of the velocity distribution across a pipe diameter or normal curve. Mr. Naiman solves this problem very nicely by assuming that streamline flow is a special case of turbulent flow. He further simplifies the problem by analyzing turbulent flow as flow along streamlines, but with radial as well as horizontal velocity. This may be explained by considering that the pressure is lower at the pipe wall because the pressure drop due to frictional resistance is greater at this point. Also elastic impact is not 100 per cent realized, therefore there is a small amount of pressure energy converted to heat energy at the pipe wall.

From the above, Mr. Naiman derives the following equation for velocity distribution in a pipe line which he proposes for general use:

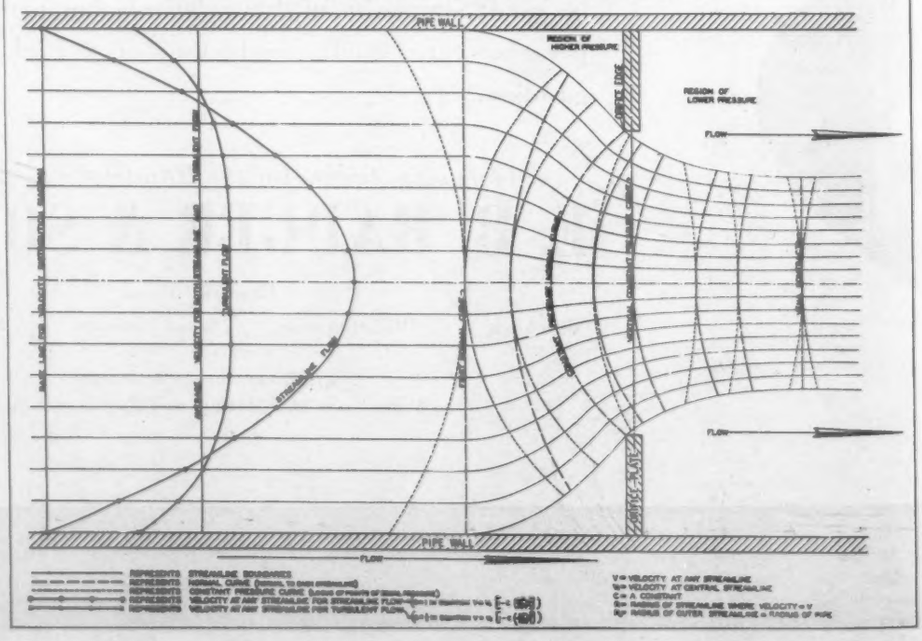
$$V = V_c[1 - C(\frac{R^2}{R_o^2})^{1/c}]$$

where

V = velocity of any streamline
V_c = velocity of center streamline
C = constant, a function of Reynold's number (Equals 1 for streamline flow and ½ for commercial turbulent flow)
R = radius of streamline with velocity = V
R_o = radius of outer streamline = pipe radius

Final.—From the above four conceptions of Mr.

SKETCH SHOWING NAIMAN ANALYSIS OF
MECHANICS OF FLOW THROUGH ORIFICES AND VELOCITY DISTRIBUTION IN PIPES



Naiman and the three mentioned physical laws it is possible to calculate the contraction ratio m, which is the ratio of vena contracta to orifice diameter, when n, the ratio of orifice to pipe diameter, and the velocity-distribution constant, C_1, at the first normal curve are known. A term z^1, a characteristic constant of the constant-pressure normal curve, is used.

Mr. Naiman offers the following example:

Assume $C_1 = 8$

$$z^1 = \frac{2-(2-C_1)^2}{C_1(2-C_1)} = .583$$

$$n^2 = \frac{(4-C_1)z^1}{4(1-z^1)+3C_1z^1} = .608 \qquad n = .780$$

$$m^2 = \frac{2-C_1}{2(1-n^3)+2-C_1} = .605 \qquad m = .778$$

He states that this agrees with experimental results fairly well, and attributes the small error to errors in the velocity distribution equation which effects C_1.

Mr. Naiman realizes that the problem is as yet not completely solved but offers the results of his work so far to others hoping that they will find useful formulas and concepts. He concludes by saying: "When the author succeeds in developing a suitable velocity-distribution equation, which will overcome the difficulty described, it should be possible with the other equations developed by the author to complete successfully the solution of the flow-through-orifices problem."

Velocity Distribution in Flow Through Pipe

FOR streamline flow through a capillary tube, viscosity causes a reduction in velocity from a maximum value at the center of the tube to a minimum and zero value at the wall of the tube.

The resulting velocity-distribution curve is parabolic in shape, satisfying the equation,

$$V = V_c\left(1 - \frac{R^2}{R_o^2}\right) \qquad (49)$$

For the central streamline $R = 0$, the velocity is a maximum and is equal to

$$V_m = V_c(1-0) = V_c \qquad (49a)$$

while for the outermost streamline $R = R_o$, the the velocity is a minimum and is equal to

$$V_o = V_c(1-1) = 0 \qquad (49b)$$

The average velocity V_a across any area $A = R^2$ bounded by streamline R can be calculated as

$$V_a = \frac{\int V dA}{A} = \frac{\int V_c\left(1 - \frac{R^2}{R_o^2}\right)\pi d(R^2)}{\pi R^2}$$

$$= V_c\left(1 - \frac{R^2}{2R_o^2}\right) = \frac{V_c + V}{2} \qquad (50)$$

For the particular case of $R = R_o$ or of the total cross-sectional area of the pipe, the *average velocity* is equal to

$$V_a = \frac{V_c + 0}{2} = \frac{V_c}{2} \qquad (50a)$$

which is *50 per cent of the maximum velocity.*

It is therefore evident that, *for streamline flow through pipes, the average velocity is equal to the arithmetical mean of the maximum and minimum velocities for any portion of the pipe area.*

For turbulent flow we have, in addition to a velocity component in the direction of flow, which may be properly designated as a *linear velocity component*, another velocity component perpendicular to the direction of flow. This velocity component radiates in all directions perpendicular to the axis of the pipe and may therefore be designated as a *radial velocity component*. The name polar velocity component has also been suggested.

Without going into details of the nature of turbulent flow through pipes in this summary of flow through orifices, the author would like to mention the point that radial velocity or cross-currents are caused by radial pressure difference between the center and the wall of the pipe along a given cross-section of the pipe.

This pressure difference in turn is due to uneven frictional pressure drop along the original streamlines, those located close to the wall of the pipe losing more pressure than the streamlines located in the middle of the pipe. The cause of this is pipe roughness which adds another source of friction to the original source of viscosity.

Impact Not Perfectly Elastic

Impact of a fluid against a solid wall is not perfectly elastic, as demonstrated by modern atomic and molecular theory. If a gas is at rest and there is no temperature difference between the gas and the wall, the imperfectly elastic impact of the gas molecules against the molecules of the wall causes as much gain in the energy of internal molecular vibration as there is loss of such internal energy. Also, there are as many molecules absorbed by the intermolecular crevices of the pipe wall as there are emitted by the pipe wall, so there is no change in the total energy of the gas molecules or no transfer of heat.

But, if there is either a temperature difference between the gas and the wall, or the gas is moving, such balancing of energy transfer does not materialize. In the case of temperature difference, heat transfer occurs. In the case of gas flow, a part of the total energy of the gas is given up to the wall in the form of heat. This results in frictional pressure drop.

Because of the similarity of mechanical energy loss due to impact against pipe walls by flowing fluids to that of solid-body impact, the familiar term of "coefficient of restitution," e, has been adopted by the author. The loss of kinetic energy per unit volume per impact is therefore equal to

$$(1 - e^2)\frac{\gamma v^2}{2g} \qquad (51)$$

where

e = coefficient of restitution of the fluid against the given solid material

v = fluid velocity *normal* to the surface of impact

$\frac{\gamma}{g}$ = mass of fluid per unit volume

In analyzing the previously mentioned Stanton, Marshall and Bryant (1920 tests) for velocity distribution close to the wall of a 5-in. drain pipe, the author has used the following expression for *frictional resistance*, R_f,

$$R_f = \mu\frac{\partial v}{\partial t} + \beta\frac{\gamma v^2}{g} \qquad (52)$$

where

R_f = frictional resistance per unit surface of pipe $= \frac{R_o}{2}P_f$

P_f = pressure drop per unit length of pipe

R_o = pipe radius

μ = fluid viscosity

$\frac{\partial v}{\partial t}$ = velocity gradient perpendicular to direction of flow

β = pipe-roughness factor, which is proportional to $(1 - e^2)$ and is also a function of the dimensions of the pipe roughness

$\frac{\gamma}{g}$ = mass of fluid per unit volume

v = fluid velocity (in the direction of flow)

Check Stanton Tests

In due time, the author intends to publish his analysis of the Stanton et al 1920 tests. For the present, it should suffice to report that it has been possible to check the above data against the author's theoretical analysis after certain minor corrections were made for Pitot tube position by taking advantage of the boundary condition that $v = o$ at the pipe wall, so that

$$R_f = \mu\frac{\partial v}{\partial t} \qquad \text{for } t = o \qquad (43a)$$

The slope of a given velocity-distribution curve for $t = o$ could therefore be calculated from the flow-resistance, R_f, data and compared to the velocity curve corresponding to the uncorrected Pitot tube position.

The loss of kinetic energy per impact for the above test conditions was calculated to be only 1/14 per cent, showing how small a deviation from perfectly elastic impact is involved and yet is a major source of frictional pressure drop.

The film thickness, t_m, of the boundary layer near the wall of the pipe, where streamline flow was found by Stanton et al to exist, is of the order of about 0.005 in., the value of t_m depending on the Reynold's number as well as on the pipe roughness and on the coefficient of restitution of the fluid against the material of the pipe wall.

Pipe Roughness Increases Drop

The statistical average shape of what may be called the "nodular protrusion" of the wall surface was calculated to be a parabolic surface of revolution with zero slope at the base and a base dimension of about 1/64 in. The depth of the nodules could only be judged by the film thickness, t_m. With the Pitot tube corrections previously mentioned, it has been possible to correlate actual velocity distribution and the thickness of the boundary layer with the above experimental data.

Because of the effect of impact against pipe roughness as an added source of pressure drop in the boundary layer close to the pipe wall, the pressure drop per unit length of pipe in the boundary layer is greater than in the middle of the pipe. For a given pipe cross-section, this results in a greater pressure away from wall than close to the wall of the pipe causing eddy currents toward the pipe wall.

When these crosscurrents reach the pipe wall, they are deflected and begin to move in the opposite direction toward the center of the pipe until they reach the opposite wall when they are again deflected. The average foreward travel of the fluid between deflections may be termed

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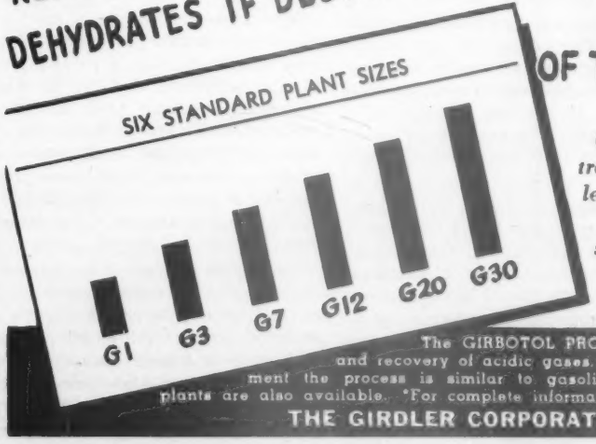

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"mixing length" and determines the number of impacts by the total mass of the flowing fluid against the pipe wall per unit length of pipe.

At each impact, $(1-e^2)$ fraction of the fluid kinetic energy is converted into heat. This uses up a portion of the excess pressure in the central portion of the pipe. The balance of such excess pressure is used up by the viscous shear resulting from the difference between the linear velocity of the turbulent fluid as it reaches the pipe-wall boundary layer and the streamline velocity at the edge of the boundary layer. Because of the finite difference between these two velocities, an intermediate region or buffer layer is formed between the edge of the boundary layer and the turbulent region, where a velocity gradient is formed sufficient to produce the viscous-pressure drop required to balance the remaining excess of the boundary-layer-pressure drop over that in the turbulent region after the impact-pressure loss is accounted for.

It is such balancing of pressure drop between the boundary layer and the turbulent region which fixes the ratio between the radial kinetic energy and the linear kinetic energy of the turbulent region in the pipe.

Tendency to Normalize

Because of the mixing produced by the radial velocity component, there is a tendency to equalize the normal difference in linear velocity between the pipe center line and the edge of the boundary layer in the turbulent region. The result is that the minimum linear velocity of the turbulent region at the edge of the boundary layer becomes equal to roughly the arithmetical mean of the original velocity of the pipe, resulting in a minimum linear velocity for the turbulent region of the order of 50 per cent of the maximum velocity. On the other hand, the approximate value of the streamline velocity at the boundary layer is of the order of 25 per cent of the maximum velocity at the center of the pipe. This large finite difference in velocity at the edge of the boundary layer is tapered off by a suitable thickness of a buffer layer located between the edge of the streamline boundary layer and the turbulent region, the value of this thickness, as previously stated, being determined by the velocity gradient necessary to use up the unaccounted for balance of excess pressure in the turbulent region of the pipe over that in the boundary layer where streamline flow persists.

The linear velocity gradient of the turbulent region has been studied by the author, based on an analysis of average velocity. As previously brought out, the average velocity of streamline flow is equal to the arithmetical mean of the maximum and minimum velocity for any portion of the pipe area; i.e.,

$$V_a = \frac{V_c + V}{2} = \frac{1}{2}V_c + \frac{1}{2}V \quad \text{(see Equation 50)}$$

Since streamline flow may be looked upon as a particular case of turbulent flow with a zero radial-velocity component, the above average-velocity equation may be considered as a particular case of a more general relation, such as

$$V_a = a\,V_c + (1-a)V \qquad (53)$$

where the term a is a function of the Reynold's number with a limiting value of $a = \frac{1}{2}$, as the radial-velocity component approaches zero.

We shall now explore the effects of such a general average-velocity equation. From the definition of average velocity, we may write mathematically,

$$V_a = \frac{\int V dA}{A} = a\,V_c + (1-a)V \qquad (54)$$

where

A = cross-sectional area
V_c = maximum velocity of the area
V = minimum velocity of the area
V_a = average velocity of the area
a = coefficient which is a function of the Reynold's number

Differentiating the last equation, we get

$$V dA = dA[a\,V_c + (1-a)V] + A(1-a)dV \qquad (55)$$

which may be rewritten as

$$\frac{dA}{A} = \frac{-(1-a)dV}{a(V_c - V)} \qquad (55a)$$

Integrating the last equation, we get

$$ln(\frac{A}{A_o}) = (\frac{1-a}{a})\, ln(\frac{V_c - V}{V_c - V_o}) \qquad (56)$$

where

V_o = velocity for $A = A_o$

The last equation may be rewritten as

$$A = A_o(\frac{V_c - V}{V_c - V_o})^{(1-a)/a} \qquad (56a)$$

or, since

$$A = \pi R^2$$
$$A_o = \pi R_o^2$$

Equation 56a corresponds to

$$\frac{V_c - V}{V_c - V_o} = (\frac{R^2}{R_o^2})^{a/(1-a)} \qquad (56b)$$

or

$$V = V_c - (V_c - V_o)(\frac{R^2}{R_o^2})^{a/(1-a)}$$
$$= V_c[1 - c(\frac{R^2}{R_o^2})^{a/(1-a)}] \qquad (56c)$$

where

$c = \frac{V_c - V_o}{V_c}$ = function of Reynold's number
a = another function of Reynold's number

For the particular case of zero radial velocity, or streamline flow, we have

$$c = \frac{V_c - 0}{V_c} = 1 \qquad (57a)$$

and $a = \frac{1}{2}$

so that the general velocity-distribution equation reduces to

$$V = V_c(1 - \frac{R^2}{R_o^2}), \text{ as required (see Equation 49)} \qquad (56d)$$

To determine the relation between the two Reynold's number functions a and c, let us utilize the available experimental data for average velocity of turbulent flow through pipes and the available data on the required Pitot tube location for registering the average velocity of flow through pipes.

The author wishes to thank Dr. Max Jakob of the Illinois Institute of Technology for suggesting such a check.

The expression for average velocity of turbulent flow may be calculated from the general velocity-distribution equation (56c) as an extra check of the average-velocity equation (53). Thus, we may write

$$V_a = \frac{\int V dA}{A} = \frac{\int V_c[1 - c(\frac{R^2}{R_o^2})^{a/(1-a)}]\pi d(R^2)}{\pi R^2}$$
$$= V_c[1 - c(1-a)(\frac{R^2}{R_o^2})^{a/(1-a)}] \qquad (54a)$$

This compared with a value for the average velocity based on Equation 53 of

$$V_a = a\,V_c + (1-a)V$$
$$= a\,V_c + (1-a)V_c[1 - c(\frac{R^2}{R_o^2})^{a/(1-a)}]$$
$$= V_c[1 - c(1-a)(\frac{R^2}{R_o^2})^{a/(1-a)}] \qquad (53a)$$

which is the same as Equation 54a, as required.

For the full cross-section of the pipe, corresponding to $R = R_o$, the average velocity becomes equal to

$$V_a = V_c[1 - c(1-a)] = 0.833\,V_c = \frac{5}{6}V_c \qquad (53b)$$

or

$$c(1-a) = \frac{1}{6}$$

if we use $0.833 = 5/6$ as the numerical value of the ratio of average to maximum velocity for turbulent flow through pipes.

At the point R_a of Pitot tube location for registering the average velocity in a pipe, we must have from the velocity-distribution equation the relation,

$$V_a = V_c[1 - c(\frac{R_a^2}{R_o^2})^{a/(1-a)}] = V_c[1 - c(1-a)] \qquad (58)$$

or

$$(\frac{R_a}{R_o})^{2a/(1-a)} = 1 - a$$

and $$\frac{R_a}{R_o} = (1-a)^{(1-a)/2a} = 0.760 \qquad (58a)$$

if we use 0.240 R_o as the distance of Pitot tube location from the pipe wall.

Combining the two equations for c and a, we may write, since $1 - a = 1/6c$ or $a = (6c-1)/6c$,

$$(1-a)^{(1-a)/2a} = (\frac{1}{6c})\frac{1}{2(6c-1)} = 0.760 \qquad (58b)$$

whose solution is

$$c = \tfrac{1}{2} \qquad (58c)$$

corresponding to

$$a = \frac{6c-1}{6c} = \tfrac{2}{3} \qquad (59)$$

and

$$\frac{a}{1-a} = 2 \qquad (59a)$$

Therefore, for the case of turbulent flow characterized by an average velocity equal to 83.3 per cent of the maximum velocity and requiring a Pitot tube location 24 per cent of a radius from the pipe wall to register average velocity, the general velocity-distribution equation (56c) reduces to

$$V = V_c[1 - \tfrac{1}{2}(\frac{R^2}{R_o^2})^2] \qquad (56e)$$

Now, if we rewrite the velocity-distribution equation (56c) in the general form

$$V = V_c[1 - c(\frac{R^2}{R_o^2})^b] \qquad (56f)$$

we note the following interesting comparison between the coefficients c and b,

For $c = 1$, $b = 1$ (streamline flow)
For $c = \frac{1}{2}$, $b = 2$ (commercial turbulent flow)

Evidently, we may write

$$b = \frac{1}{c} \qquad (60)$$

for these two particular cases.

Since the average velocity and Pitot tube data of both streamline flow and average turbulent-flow conditions are satisfied by such relation between b and c, both of which are functions of the Reynold's number, the author suggests the adoption by the engineering profession of the following velocity distribution equation for streamline as well as turbulent flow through pipes:

$$V = V_c[1 - c(\frac{R^2}{R_o^2})^{1/c}] \qquad (61)$$

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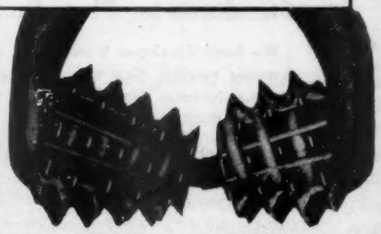

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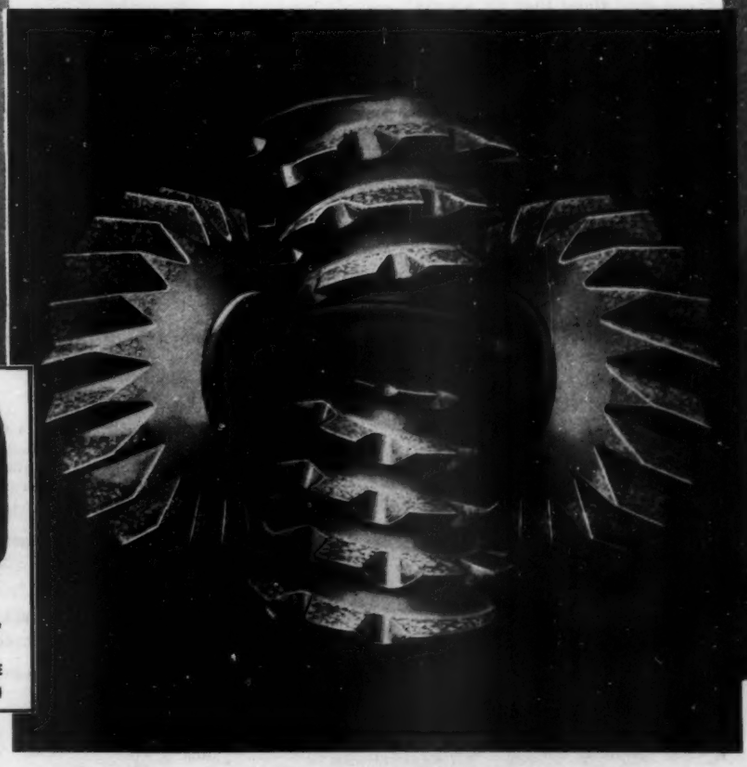

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QUESTIONS ON TECHNOLOGY

By W. L. NELSON, TECHNICAL EDITOR

Study of Petroleum Refining

I wish to do graduate work in the field of petroleum chemistry especially in the chemistry of lubricating oils and related technical knowledge. Can you furnish me with the names of schools that specialize in this field of work?—M. D. K.

A specific knowledge of any phase of petroleum technology or refining has in the past been gained largely by working in the employ of some company or by experience. Much the same is true today although a few schools offer a limited amount of classwork in the general field of petroleum chemistry or petroleum refining. Courses in which petroleum lubricating oil and its chemistry is studied exclusively are probably not available unless such studies are to be followed as individual research work rather than by class lectures. You will find a few titles below that by name appear to pertain to lubrication and lubricating oils.

Refinery engineering or petroleum technology is based primarily on fundamental engineering, chemistry, and chemical engineering. For this reason most schools do not offer specialized work in petroleum refining—and those that do, always require a complete knowledge of the general topics of distillation, fluid flow, heat transfer, weight balances, and heat balances as gained in fundamental chemical engineering courses, as prerequisite to a study of petroleum refining. Thus, the fundamental principles that underlie petroleum refining can be obtained in any first-class chemical engineering school. Likewise, nearly all first-class schools offer research work in petroleum refining if such work is requested.

An example of the minimum chemistry and chemical engineering background that should be included in a petroleum refining schedule in addition to the petroleum subjects tabulated later, would be as follows:

		Credit hours
Chem.	Inorganic and qualitative chemistry	10
Chem.	Quantitative chemistry	4
Chem.	Physical chemistry	4
Chem.	Organic chemistry	8
Ch.E.	Heat and material balances (and stoichiometry)	3
Ch.E.	Principles of chemical engineering (with laboratory)	6
Ch.E.	Chemical engineering thermodynamics	2

The following is a list of courses at various schools that pertain directly to petroleum refining. Doubtless some courses have been omitted because of difficulties in getting and interpreting the catalogs of the hundreds of good schools and universities in the United States. Nearly all of the schools listed below also offer fundamental work in chemical engineering and also research work in refining. Many of them also offer work in natural gas, natural-gasoline, natural-gas engineering, and petroleum production engineering. The approximate total amount of work given is indicated by credit hours. A credit hour represents about 4 hours of time spent per week in lecture, laboratory or preparation, during a semester of 18 weeks. The general department in which the course is given is indicated by Chem. (chemistry), Ch.E. (chemical engineering), P.E. (petroleum engineering), M.E. (mechanical engineering), Ref. (refining), Prod. (production), and G. (graduate school).

Case School of Applied Science, Cleveland, Ohio, 12 credits:
Chem. Petroleum refinery engineering; Chem. Petroleum (and petroleum products); Chem. Petroleum: (G) Chem. Petroleum refinery engineering.

Columbia University, New York, N. Y., about 3 credits:
Ch.E. Fuel technology, petroleum.

Colorado School of Mines, Golden, Colo., about 20 credits and 3-6 by arrangement:
P.E. Petroleum refining; P.E. Oil testing laboratory; P.E. Refinery engineering P.E. Refining laboratory: P.E. Seminar; Chem. Chemistry of hydrocarbon derivatives; (G) P.E. Filtering agents in the oil industry (by arrangement); (G) P.E. Advanced Refining (2 courses by arrangement).

University of Southern California, Los Angeles, about 16 credits:
P.E. Mechanics of petroleum refining; P.E. Refining, distribution and utilization of products; P.E. Refinery and natural-gas engineering; P.E. Petroleum refinery engineering practice and design; Ch.E. Testing fuel, gas, and lubricants.

University of California, Berkeley, about 6 credits:
P.E. The petroleum industry; P.E. Oil and gas testing; P.E. Petroleum refining technology.

Drexel Institute, Philadelphia, Pa., about 3 credits:
Chem. Petroleum chemistry.

University of Houston, Houston, Tex., about 3 credits:
Chem. Petroleum chemistry (tests).

University of Kansas, Lawrence, about 3 credits:
P.E. Petroleum refining engineering.

Louisiana State University, Baton Rouge, about 8 credits:
C.E. Petroleum refining engineering (2 courses).

University of Michigan, Ann Arbor, about 9 credits:
Ch. E. Testing petroleum products; Ch.E. Chemical engineering of natural gasoline and crude oil; Ch.E. Petroleum refinery engineering (2 courses).

University of Minnesota, Minneapolis, about 11 credits:
P.E. Petroleum refining; Ch.E. Petroleum and petroleum products; Ch.E. Petroleum refinery engineering; Ch.E. Petroleum and petroleum products (for mining engineers).

Massachusetts Institute of Technology, Cambridge, about 2 credits:
Ch.E. Automotive fuels.

Missouri School of Mines, Rolla, about 4 credits:
Ch.E. Petroleum refinery engineering (2 courses).

University of Missouri, Columbia, about 2 credits:
Ch.E. Petroleum technology.

New Mexico School of Mines, Socorro, about 1 credit:
P.E. Petroleum refining.

University of Nebraska, Lincoln, about 8 credits:
Ch.E. Petroleum technology; M.E. Fuels and lubricants; Chem. Petroleum chemistry.

University of Oklahoma, Norman, about 10 credits:
P.E. Technology of refining; P.E. Transportation of oils and lubrication of machinery; Ch.E. Fractional distillation laboratory; Ch.E. Processing of light and heavy lubricating oil (laboratory); Ch.E. Lubrication laboratory.

Ohio State University, Columbus, about 3 credits:
Mining petroleum engineering (partly refining).

Oklahoma Agricultural and Mechanical College, Stillwater, about 10 credits:
Ch.E. Petroleum technology; M.E. Refining plant design; M.E. Advanced refinery design.

Purdue University, W. Lafayette, Ind., about 6 credits:
Ch.E. Petroleum technology; Chem. The chemistry of petroleum derivatives.

Pennsylvania State College, State College, about 15 credits:
Ch.E. Petroleum products; Ch.E. Motor fuels; Ch.E. Lubricants; Ch.E. Standard tests of petroleum and its products; P.E. Petroleum characteristics; P.E. Petroleum refining (2 courses).

University of Pittsburgh, Pittsburgh, Pa., about 6 credits:
Ch.E. Petroleum chemical engineering; Ch.E. Petroleum refining (2 courses).

Stanford University, Palo Alto, Calif., about 1 credit:
P.E. Petroleum refining and utilization.

Agricultural and Mechanical College of Texas, College Station, about 8 credits:
Ch.E. Oil and gas technology; Chem. Petroleum refining.

University of Tulsa, Tulsa, about 28 credits:
Ref. Petroleum refining (with laboratory); Ref. Treating and dewaxing; Ref. Refining laboratory; Ref. Advanced petroleum refining; (G) Ref. Heaters and cracking; (G) Ref. Fractionation and gas absorption; (G) Ref. Thermodynamics of hydrocarbons; (G) Ref. Solvent refining; (G) Ref. Refinery products and specifications; (G) Chem. Chemistry of petroleum; (G) Chem. Reactions of hydrocarbons; (G) Ref. Contemporary refining.

West Virginia University, Morgantown, about 3 credits:
Ch.E. Oil laboratory; Ch.E. Oil refining laboratory.

Virginia Polytechnic Institute, Blacksburg, about 4 credits:
M.E. Industrial lubrication; M.E. Lubricative theory and practice.

Standards for Floor Furnaces

We have developed a new type of floor furnace for domestic service. Can you direct us to specifications of such furnaces for guidance in the design of our equipment?—S. P. M.

The logical way to get information about present practice in the construction of floor furnaces is to examine the furnaces of present manufacturers and to examine the specifications for central heating systems. Central heating gas appliances are standardized by the American Gas Association in their Standard Z 21.13.

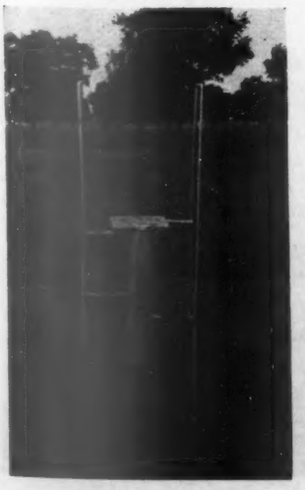
At present there are probably no standards for floor furnaces but the U. S. National Bureau of Standards is giving attention to the problem in collaboration with furnace manufacturers. A general conference is to be held in Room 300 of the South Building of the Bureau of Standards at Washington on the morning of December 4, 1941. A proposed commercial standard will be considered at that time. Any radical changes in floor furnace design could be incorporated into the standards more easily at this time than at later dates.

Operating Ideas

Elbows on Exhaust Stacks

Stacks for the cylinder exhausts on the internal-combustion engines shown in the accompanying photograph were designed with three purposes in mind. The elbows make it possible to direct the exhaust vibrations away from the derrick floor and thereby reduce the noise which in turn makes it possible for the drilling crew to hear each other. The elbows also prevent entry of rain water into the engines when they are not running. By cutting out the underside of the elbow a muffling effect is obtained. The elbows are simply made with a welding torch as only two welds need to be made.

Streamlined Stile for Line Walkers



A streamlined fence crossing for the convenience of line walkers on pipe lines can be made in the shop and installed by simply digging two properly spaced holes with a post-hole digger. Two sections of 4-in. pipe set at a slight angle provide the main support. They are held together at the top by an 8 by 12-in. plate made from tank steel. Steps are made from pieces of 1-in. pipe welded at one end to the main support and at the other end to the ⅝-in. sucker rods which form the hand rail. The stile prevents fence breakage and also acts as a line marker.

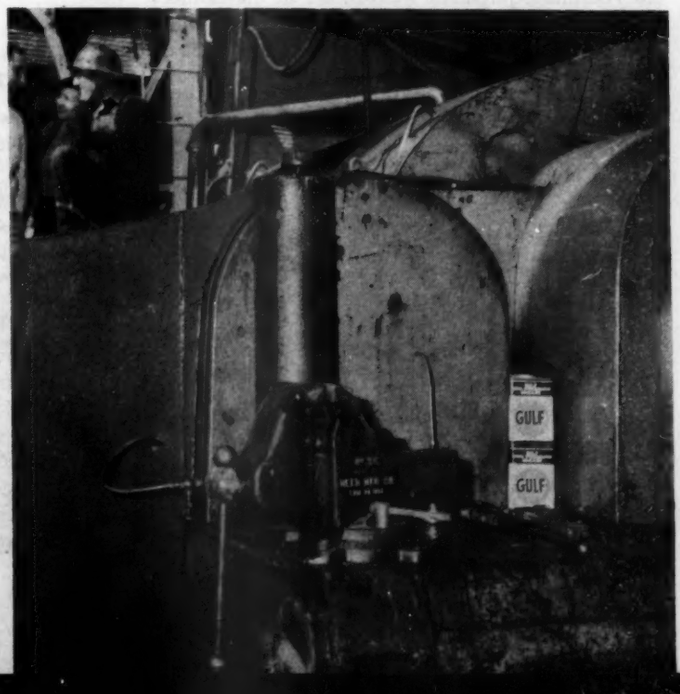
Belt-Driven Auxiliary Unit

One drilling contractor having an engine, generator and small centrifugal pump made an auxiliary unit by mounting these on a skid and installing the necessary pulleys and clutches. This eliminated much of the work necessary to build a direct-connected

unit. A pulley is also provided for driving an air-compressor and brackets are provided for a volume tank for air pressure. Butane is used for fuel in the auxiliary and rig engines. The entire assembly rests on a steel plate which is welded to a skid frame made from old drill pipe.

Vise Fastened to Draw-Works Skid

It is often difficult to find a place which will support a heavy combination vise while it is being used for rough work around a drilling rig. Even steel tool benches can be torn apart while the crew is attempting to effect some repair. The skids which support the draw works are built to withstand strains beyond those which could possibly be exerted by the crew, and it makes a satisfactory place for locating the vise. The spindle of the vise is inserted in a hole cut through the H-beam with a welding torch.



Refinery IDEAS

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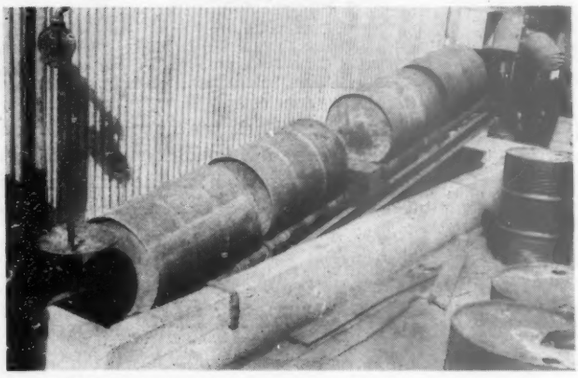
Chain Cleans Drums ↓

Drum cleaning can be a fairly expensive and time-consuming task. Removal of interior coatings is simplified here by dropping a length of chain inside the drum and then putting it on this electrically powered rack which revolves the drum. The rack may be tilted both ways so that the chain effectively scours the end as well as the wall of the drum.



Add Foamite Equipment ↓

A Foamite injector and six Foamite pails have been added to the equipment of this hose cart. The cart, as purchased, was equipped with nozzles, hose and reel and the Foamite equipment was added in the refinery. The easily removed paper cover on the injector bin is kept in place to keep out any object that might clog it and delay its use.

Quick Color Check ←

Ordinary ½-in. boiler gage glasses are placed in front of an illuminated glass. Streams from solution percolating filters run through the gage glasses. A small propeller inside of the gage glass, which does not show in the picture, indicates whether the filter is running and gives some indication as to the speed at which it is running. The filter operators carry a similar piece of gage glass filled with their standard color material and plugged at each end. By comparing their sample glass with the running streams in front of the illuminated glass background, they have a close color control over their filters without drawing samples of warm, gassy solution, which is not only a fire hazard but leads to sloppy and dirty housekeeping.

Unusual Valve Use →

This line, between compressors and a polymerization unit, illustrates an unusual use of a gas compressor valve. Previously a nonslamming, swing-type check was used to maintain pressure on the unit if the compressor shut down. This check proved ineffective and a regular ring-type, gas compressor valve was substituted and has performed very satisfactorily. It is set between the upper and lower flanges. The strength of the materials used in assembling the modern compressor valve is high enough to permit the salvaged parts to be utilized in most any type of refinery normal work.

Tank-Car Ladder →

This tank-car ladder was welded together in the refinery shop. In use it is suspended from the handrail of the car by hooks. These hooks keep the base of the ladder above ground so that if the car is shifted while the ladder is still up it will not be knocked to the ground and damaged. Note also the liberal upward extension of the arms of the ladder. This enables a loader to grasp the ladder well in advance of stepping on it. This combines safety with greater utility.

Pipe-Line Activity

Sinclair Contemplates Venezuela Pipe Line

A subsidiary of Venezuela Petroleum Co., controlled by Sinclair interests, is reported to be making preparations for laying 100 miles of 12-in. in eastern Venezuela which will provide an outlet to the northern coast for the Santa Barbara producing area. Part of the route will be in the vicinity of the 100-mile 16-in. line laid by Mene Grande Oil Co. in 1939.

Standard of New Jersey Will Lay Tinsley-Baton Rouge Line

A new crude-oil pipe-line outlet will be provided for the Tinsley, Mississippi, field. Ten-inch pipe will be used in the construction of this line, which will extend from the Tinsley field to Baton Rouge, La. Construction work is expected to start within the next 60 to 90 days. Final decision has not been made as to whether or not the line will be built and operated by the Oklahoma Pipe Line Co. or some other affiliate of the Standard Oil Co. of New Jersey. Inspection of the route is being carried on this week preliminary to making a survey.

According to a report confirmed by the Standard Oil Co. of Louisiana organization, the proposed Tinsley-Baton Rouge line will be 175 miles long. Carter Oil Co. has an operating charter in the State of Mississippi but Standard of Louisiana does not have such a charter. Requirements indicate a need for line capacity of 15,000 to 25,000 bbl. daily. This project represents the first step taken to provide pipe-line transportation all the way to a refinery outside the State of Mississippi.

Sohio Pipe Line Co. has been considering laying a line from the Tinsley field to Memphis, Tenn.

Defense Function of Pipe Lines Is Discussed by A. N. Horne

DALLAS, Tex.—American pipe lines are doing their part in "the most gigantic task in history in preparing for national defense," A. N. Horne, of Bartlesville, Okla., manager of the Empire Pipe Line Co., told the opening session of the Petroleum Electric Power Association's 2-day conference.

"Our oil is in the ground where it cannot be bombed or destroyed," Mr. Horne said. "Our pipe lines can take our daily needs from this the safest of all storage and can dependably deliver it to refiners and consumers.

"Although pipe lines are subject to possible bombing and sabotage, repairs of possible damage are relatively simple and quick."

Phillips Will Lay 125 Miles to Loop and Extend Gasoline Line

Construction equipment is arriving in the Harrisonville, Mo., area where the laying of pipe to enlarge the capacity of the Borger, Tex.-Chicago, Ill., gasoline trunk line of Phillips Petroleum Co. will start soon.

The company's program calls for the laying of a total of 125 miles of 8-in. pipe. Of this, 72 miles will be laid in seven loops in Missouri. The system will be extended into Kansas City by the construction of a 53-mile lateral from Paola, Kans., where the laying of pipe will start within about 2 weeks. Arrangements have been made for the delivery of pipe at the rate of about 10 miles per day. The laying of the line has been contracted by O. E. Dempsey Construction Co.

Southeastern Will Dedicate Pipe Line December 19

ATLANTA, Ga.—The new refined products system of Southeastern Pipe Line Co. will be publicly dedicated here on December 19 to the service of this strategic section of the United States.

The new Southeastern Pipe Line is equipped to transport approximately 30,000 bbl. of gasoline a day. The total length of the line is 456 miles, with over 31,000 tons of 8 and 6-in. steel pipe.

The dedication will be held at the Chattahoochee terminal of the pipe line, just outside Atlanta. The speakers on this occasion will be Sen. Walter F. George, Georgia's senior senator, and Rep. William P. Cole, Jr., of Maryland, chairman of the petroleum subcommittee of the House of Representatives and author of the bill which gave pipe lines the right of eminent domain in the name of national defense.

Wisconsin Commission Grants Phillips Natural-Gas Permit

MADISON, Wis., Dec. 8.—While natural gas has hurdled its first barrier to introduction in Wisconsin, developments have demonstrated that final victory will not be achieved without a court test.

Coal dock interests already have announced intention to demand a rehearing, preliminary to a court appeal, on the state Public Service Commission's order granting a certificate of convenience and necessity to the Wisconsin Gas Transmission Co. for construction of a pipe line into the state. Railroad and labor interests have indicated similar intention and the Racine County Board adopted a resolution opposing entrance of a pipe-line into that county on ground that it would lose $73,000 annually in taxes from the Wisconsin Gas & Electric Co.

The Public Service Commission's announcement that the certificate had been awarded to the Phillips Petroleum Co.'s Wisconsin subsidiary was oral, and its formal order detailing reasons for the selection was promised within 10 days. Counsel for Western Natural Gas Co. and Natural Gas Pipeline Corp. of America, which sought the certificate for their Wisconsin subsidiaries, have indicated they will await the formal order before deciding upon further procedure.

The certificate was awarded by a 2 to 1 vote, with Chairman R. W. Peterson announcing he will file a dissenting opinion supporting his preference for the Badger State Pipe Line Co., subsidiary of Natural Gas Pipeline.

Commissioner Robert Nixon, whose first vote was cast for Wisconsin Natural Gas Co., subsidiary of Western, later joined Commissioner W. F. Whitney in support of Wisconsin Gas Transmission, minutes of the meeting disclosed.

The award to Wisconsin Gas Transmission Co. was conditional upon a bond to assure delivery of natural gas in the state within 18 months on penalty of a daily forfeit for failure and upon a downward revision of the company's proposed rate structure eliminating from consideration any previously proposed contributions to operating utilities in the state as compensation for retirement of plants now producing manufactured gas.

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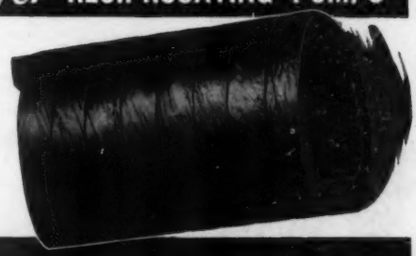

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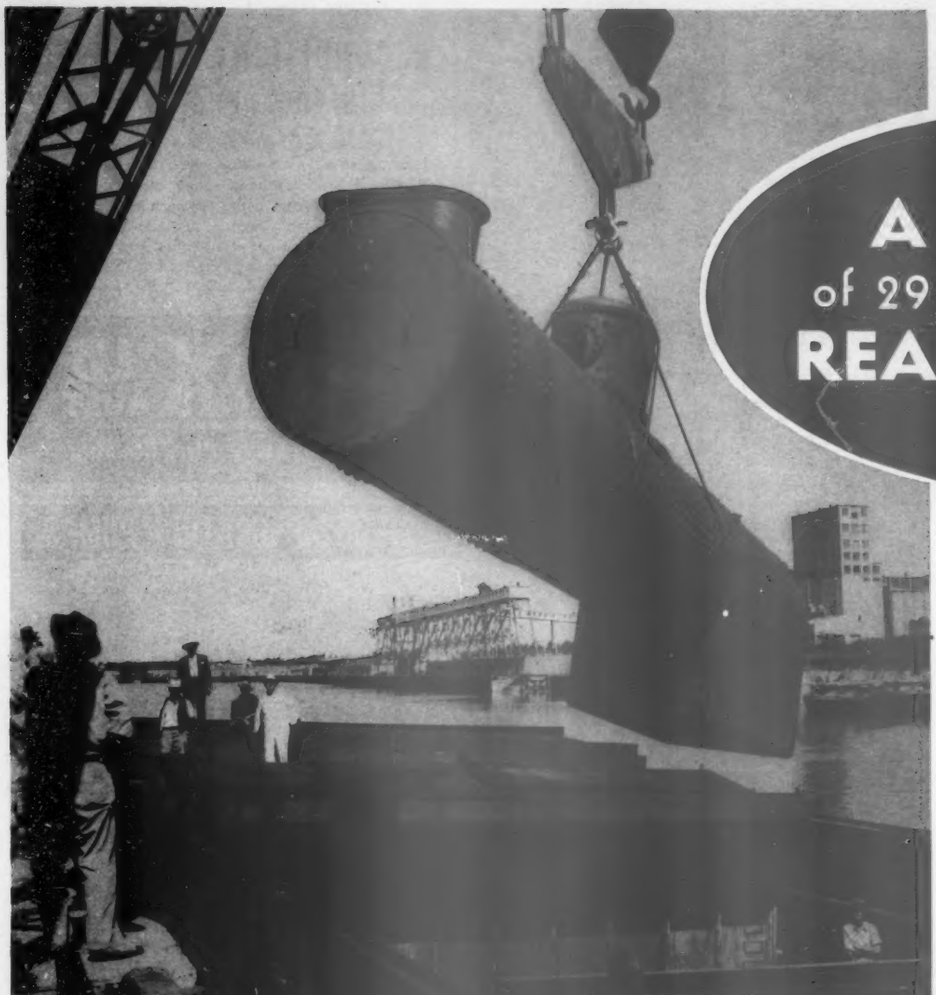

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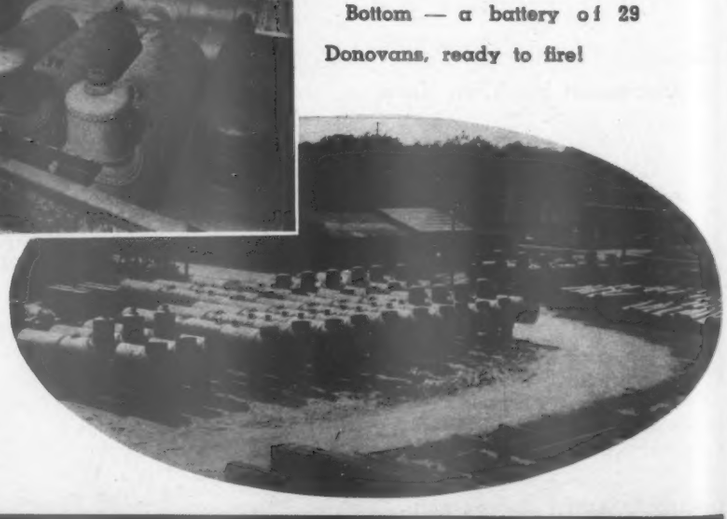

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FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

Completions reported during the past week rose sharply to 659, an increase of 73 over the preceding week. Oil wells were up 35, gas wells and dry holes up 19 each. It is probable that many completions were held back by bad weather during recent weeks and that much of this week's increase is due to restoration of normal conditions. The average rate of completions has been above 600 wells for the past 6 months with the abnormally high rate of 650 wells prevailing through the summer and early fall. The normal drop of previous years during the closing months has been greatly reduced this year and average weekly completions are 20 per cent above the rate prevailing during the closing months of 1940.

Although price improvement has helped increase drilling, it is probable that much of the gains resulting from higher prices have been offset by increased costs. Fear of a shortage of steel has been credited with causing a high completion rate but these fears have been largely allayed and the high rate continues. It appears more likely that the drain on our reserves caused by a 500,000-bbl. daily increase coupled with the fact that we are not finding large flush production is as responsible as any single factor for present activity.

Discoveries continue at the present normal rate of some five a week and extensions to known fields are also abundant but in most states new production is being curtailed by conservation measures or by lack of market outlets. Each of these discoveries or extensions increases the number of wells that have to be drilled, which, in turn tends to keep allowables down. The operator is thus compelled to drill wells to meet the rising demand, but this increase is not sufficient to raise his production to the point where the wells pay out in what he considers a reasonable time.

Lack of uniformity in state regulations tends to send the operator into those states where allowables are highest so that he can make his wells pay. There is thus a tendency to overproduce in those states, with a consequent rapid drop in the near future unless new reserves are added rapidly.

On the other hand, the bulk of the discoveries are in the more highly prorated states. Lacking any major discoveries which will abruptly change conditions, it appears as if next year will see a considerable increase in drilling in the prorated states coupled with gradually increasing allowables as the other states decline in production.

For many years operators in Texas and Kansas have seen their production restricted but have hoped for an adjustment. Indications are that the nation will become more and more dependent on these states for its future supply, and they contain a great number of practically proven undrilled locations which are available for development as soon as economic conditions warrant.

WYOMING: Small extensions are reported at Mahoney and Cole Creek (p. 83).

ILLINOIS: McClosky oil is reported in two Clay County tests and east of Centerville in White County. Small production is reported from the Aux Vases in a Saline County wildcat (p. 70).

TEXAS GULF COAST: Activity is more or less confined to completion of wildcat tests previously reported. These include the opening of Cockfield production at Fostoria and a Wilcox gas-distillate pay at Lissie. A deep flank well on Big Hill is being tested (p. 92).

WEST TEXAS: A new Ordovician pool has been opened in northern Pecos County near the old Rowan and Tong pool. As a dry hole 1½ miles to the south was drilled to the granite without finding any Ellenburger, this well is near the southern limit of possible production from that pay (p. 72).

CALIFORNIA: A shallow Vedder zone pay has been picked up east of the Mount Poso field. In the Raisin City area, a third pool is being opened up. This is the Riverdale prospect south and east of the Helm field which in turn is southwest of Raisin City (p. 81).

OKLAHOMA: Three wildcats in Comanche County along the Apache trend have been abandoned but drilling in the field is increasing. The second producer in the shallow Woolsey pool in Stephens County went out of control with a flow estimated at 150-200 bbl. an hour (p. 80).

KANSAS: Two Viola producing spots have been opened up northeast of Peace Creek along the Zenith trend. First production from the Lansing-Kansas City in Barber County was reported at 125 bbl. an hour (p. 75).

NORTH LOUISIANA: The Willow Lake discovery in Catahoula Parish tested 175 bbl., and a Wilcox sand test in Tensas Parish is showing oil. A deep test near Shreveport is reportedly running high and has picked up some oil odors (p. 89).

ARKANSAS: Production has been established in the Travis Peak formation at Smart (p. 89).

NORTH TEXAS: Good Ellenburger production has been found in the Consolidated pool of Wilbarger County. Two wildcats in the district report shows and two others are testing (p. 76).

INDIANA: McClosky production is reported in a test in Sullivan County. Activity is increasing in the third of the current crop of discoveries, the Mount Vernon field (p. 84).

LOUISIANA GULF COAST: Another gas-distillate field is in prospect in the Lewisberg area, Acadia Parish. This is on a long deep salt ridge and a wildcat in the Thornwell area on the same trend is also reporting gas (p. 79).

MICHIGAN: A second pool may be opened in Roscommon County as a result of a flowing well in the Dundee (p. 95).

MISSISSIPPI: The state's fourth field, which may eventually prove a 2-mile extension to the Pickens field, was brought in by a 600-bbl. well in the Wilcox (p. 97).

SOUTHWEST TEXAS: A new Frio-Vicksburg sand has been found productive 1½ miles north of the Sun field. The Government Wells discovery in the Yegua flowed 3 bbl. an hour through choke. Oil from a shallow sand has been found northeast of Bruni (p. 93).

COMPLETIONS IN ALL FIELDS . . .

(Week Ended December 6, 1941)

	Oil	Gas	Dry	Total	1941 total comp. to date	1940 total comp. to date
N. Y., Pa., and W. Va.	96	26	3	125	5,590	5,188
Ohio	18	14	18	50	1,608	1,430
Indiana	7	2	4	13	480	424
Kentucky	3	1	2	6	620	555
Illinois	67	0	27	94	3,446	3,572
Michigan	13	3	7	23	866	1,068
Kansas	21	1	5	27	2,003	1,734
Nebraska	0	0	0	0	76	40
Missouri, Iowa	0	0	3	3	37	36
Oklahoma	22	4	12	38	1,759	1,739
Texas:						
North Central Texas	34	0	16	50	2,565	2,611
West Texas	51	1	7	59	2,155	1,755
Texas Panhandle	13	5	0	18	654	521
Eastern Texas	20	1	3	24	977	585
Texas Gulf Coast	24	0	4	28	1,014	1,105
Southwest Texas	17	2	8	27	1,743	1,963
Total Texas	159	9	38	206	9,108	8,540
North Louisiana	11	0	4	15	730	622
Louisiana Gulf Coast	8	0	5	13	804	940
Total Louisiana	19	0	9	28	1,534	1,562
Arkansas	1	3	0	4	189	167
Mississippi and Southeast	3	0	1	4	264	189
Montana	3	0	0	3	273	227
Wyoming	6	0	2	8	173	154
Colorado	0	0	0	0	30	17
New Mexico	8	0	0	8	265	571
California	14	2	3	19	1,055	950
Total United States	460	65	134	659	29,376	30,157
Total previous week	425	46	115	586		
Week ended Dec. 7, 1940	355	49	103	507		

White, Hamilton Counties Are Center of Increasing Work

By STAFF CORRESPONDENT

MATTOON, Ill., Dec. 8.—Only two areas were considered "hot spots" in southern Illinois oil exploration last week although operations increased to 467, 11 more than for the previous week. Hamilton County was the most active area in the state with 87 tests, while White County dropped back into second place with 86 operations.

One of the important areas was in Clay County, about 3½ miles south of Flora, where the L. & W. Drilling 1 Thompson, N½ NW SE 30-3n-6e, was near completion in the McClosky lime after flowing oil from that formation during a preliminary test. Pay believed to exist in the Benoist and Aux Vases sands will probably be tested before the well is completed.

Meanwhile, operators were waiting on cement with casing set to promising McClosky saturation at 3,070-82 ft. at the unheralded wildcat, B. F. Williams 1 Nolan, S½ SE NW 10-2n-7e, which suddenly came in flowing oil into the pits after 13 minutes of a drill-stem test.

McClosky May Pay Off In East Centerville Pool

The other important area in Illinois was in White County, east of Centerville, which was opened to exploration by Sun Oil Co. 1 Strowe, SE NW 7-4s-10e. Near the Strowe well, which is producing from the Tar Springs sand at 2,477 ft., W. C. McBride, Inc., 1 Daly, N½ SW SW 7-4s-10e, is waiting on cement after flowing oil on a drill-stem test of the McClosky. Casing was set at 3,252 ft. after McClosky saturation was encountered at 3,265-76 ft. Hole is bottomed at 3,276 ft. On a drill-stem test opened 30 minutes and with packer set at 3,260 ft., the well flowed with 1,950 ft. of drill pipe in the hole. It also flowed when all but 300 ft. of drill pipe had been removed. In addition 40 ft. of oil-cut mud was recovered. No. 1 Daly was dry in the Tar Springs.

New Pool Looms for Saline County

The Magnolia Petroleum Co. appears to have opened a new pool in Saline County which now has only one oil well. Magnolia 1 Molinarolo, SE NW NE 8-8s-7e, is producing about 1 bbl. an hour from the Aux Vases sand. Saturation was also encountered in the Levias at 2,965-75 ft. No. 1 Molinarolo offsets the county's only producer, Thompson 1 Reich, a small McClosky producer. The wells are north of Eldorado.

Additional Tests Staked in New Pools

Two new wells were drilling this week end in the Ste. Marie pool in Jasper County, opened last week by the Craft-Powers 1 Wade, W½ SW NW 5-5n-14w, a McClosky lime producer. Other locations have been staked in the area but these are not yet active. Jabionski et al 1 Fischer, W½ SE SW 18-5n-14w, a wildcat 2 miles south of the discovery, has started drilling operations.

A new well has been staked by the Carter Oil Co. east of its 1 Haybrook, E½ SE SW 2-13n-7e, Aux Vases pool opener 11 miles north of Mattoon in Coles County.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Johnsonville	10	4,082	31,559
Mill Shoals	5	1,528	16,201
New Harmony	5	1,124	13,763
Parkersburg	1	2,052	3,150
Roland	4	530	11,829
Rural Hill	5	2,944	16,310
Woodlawn	2	369	3,948
Other pools	24	2,976	58,499
Wildcats	1	10	447
Dry holes: Fields	15	.....	35,490
Wildcats	12	.....	33,632
Total	94	.....	224,828
Recompletions	6	466	.....

ILLINOIS COMPLETIONS

Wildcats

Franklin County: Wegner 1 Kennedy, SE NE SW 36-5s-2e, dry at 2,824 ft., Menard 1,928 ft., Waltersburg 2,001 ft., Tar Springs sand 2,098 ft., Glen Dean 2,148 ft., Hardinsburg 2,201 ft., Golconda 2,261 ft., Barlow 2,431 ft., Cypress sand 2,451 ft., Paint Creek 2,504 ft., Paint Creek sand 2,556 ft., Benoist 2,604 ft., Benoist sand 2,669 ft., Ste. Genevieve 2,716 ft., Fredonia 2,797 ft.

Bell & Zellar Coal 1 Ziegler Coal & Coke, NE NE NW 19-7s-2e, dry at 2,823 ft., base Pennsylvanian 1,636 ft., Menard 1,826 ft., Vienna 1,976 ft., Tar Springs 1,982 ft., Glen Dean 2,069 ft., Hardinsburg 2,131 ft., Golconda 2,178 ft., Barlow 2,320 ft., Cypress sand 2,355 ft., Paint Creek 2,438 ft., Benoist 2,506 ft., Renault 2,524 ft., Aux Vases 2,572 ft., Ste. Genevieve 2,654 ft., Rosiclare 2,702 ft., Fredonia 2,786 ft.

Adkins 1 Ice, NE NW SE 21-7s-3e, dry at 2,955 ft., base Pennsylvanian 1,634 ft., Degonia 1,728 ft., Clore 1,811 ft., Palestine 1,819 ft., Glen Dean 2,250 ft., Golconda 2,357 ft., Barlow 2,509 ft., Cypress sand 2,520 ft., Paint Creek 2,638 ft., Renault 2,738 ft., Aux Vases 2,790 ft., Ste. Genevieve 2,841 ft., Rosiclare 2,861 ft., Fredonia 2,940 ft.

Hamilton County: Kingwood 1 C. Johnson, S½ SE NE 3-5s-6e, dry at 3,594 ft., Tar Springs 2,728 ft., Glen Dean 2,808 ft., Hardinsburg 2,902 ft., Golconda 2,959 ft., Barlow 3,084 ft., Cypress 3,104 ft., Cypress sand 3,143 ft., Paint Creek 3,265 ft., Renault 3,388 ft., Aux Vases sand 3,414 ft., Ste. Genevieve 3,429 ft., Rosiclare 3,478 ft., Fredonia 3,502 ft., McClosky 3,526 ft.

Ryan Oil 1 Mitchell, S½ SE SW 29-4s-6e, dry at 3,525 ft., Glen Dean 2,744 ft., Barlow 3,023 ft., Benoist 3,197 ft., Renault 3,224 ft., Aux Vases sand 3,309 ft., Ste. Genevieve 3,358 ft., Fredonia 3,434 ft.

Jackson County: Jack Brown 1 First Nat. Bank of Murphysboro, SW SE NW 36-8s-3w, dry at 170 ft.

Jackson Oil 1 J. B. Bechlopt, SW SW NE 5-8s-2w, location abandoned.

Glenwood Oil 1 Traux-Traer Coal, NE SE SE SW 36-7s-2w, dry at 2,015 ft., Kincaid 947 ft., Clore 1,180 ft., Palestine 1,222 ft., Menard 1,308 ft., Waltersburg 1,412 ft., Vienna 1,468 ft., Tar Springs 1,472 ft., Glen Dean 1,555 ft., Hardinsburg 1,587 ft., Golconda 1,645 ft., Cypress 1,805 ft., Paint Creek 1,890 ft., Aux Vases 2,005 ft., junked hole.

Jefferson County: Kingwood 1 Interstate Coal, N½ NE NW 4-4s-2e, dry at 2,870 ft., Kincaid 1,628 ft., Menard 1,878 ft., Tar Springs 1,993 ft., Glen Dean 2,225 ft., Golconda 2,312 ft., Cypress sand 2,330 ft., Benoist 2,503 ft., Renault 2,520 ft., Aux Vases 2,571 ft., Ste. Genevieve 2,628 ft., Levias 2,645 ft., Rosiclare 2,654 ft.

Macoupin County: F. Mudgett 1 Goebelt, N½ SW NE SE 20-10n-7w, pumped 10 bbl., Pottsville 436 ft., T.D. 447 ft.

Wayne County: Ivan White 1 Joe Kieffer, SW NW SE 2-1s-6e, dry at 3,274 ft., Menard 2,425 ft., Glen Dean 2,625 ft., Barlow 2,805 ft., Paint Creek 2,969 ft., Renault 3,015 ft., Aux Vases sand 3,089 ft., Ste. Genevieve 3,129 ft., Fredonia 3,153 ft., McClosky 3,185 ft.

Ben Nation 1 M. Harrison, W½ SW NW 19-2s-8e, dry at 3,497 ft., Glen Dean 2,741 ft., Hardinsburg 2,797 ft., Barlow 3,000 ft., Aux Vases 3,306 ft., Ste. Genevieve 3,363 ft.

White County: Stroube & Stroube et al 1 Hamilton, NE SE SW 13-7s-8e, dry at 2,925 ft., Menard 2,082 ft., Waltersburg 2,184 ft., Tar Springs 2,229 ft., Glen Dean 2,365 ft., Golconda 2,455 ft., Barlow 2,573 ft., Cypress 2,586 ft., Benoist 2,770 ft., Renault 2,804 ft., Aux Vases 2,885 ft.

P. E. Tipton 1 F. Jolly estate, SW NE SW 21-3s-14w, dry at 3,160 ft., Menard 2,260 ft., Waltersburg 2,347 ft., Vienna 2,388 ft., Tar Springs 2,425 ft., Glen Dean 2,543 ft., Hardinsburg 2,589 ft., Golconda 2,632 ft., Barlow 2,752 ft., Renault 2,966 ft., Aux Vases 3,032 ft., Ste. Genevieve 3,062 ft.

Fields

Albion, Edwards County: Morrison & Noah 2 Horton, NW SW SE 13-2s-10e, pumped 6 bbl., 80-qt. shot 2,979-96 ft., Benoist 2,979 ft., old well P.B. 3,224-2,996 ft.

Allendale, Wabash County: J. Young 3-A Sparks, SW NE SE 36-2n-12w, dry at 1,490 ft., Biehl 1,350 ft., Menard 1,452 ft., Waltersburg sand 1,464 ft.

Burnt Prairie, White County: New Penn. Dev. 2 B. Williams, W½ E½ NW 28-3s-9e, pumped 46 bbl., 3,000 gal. acid, McClosky 3,393-98 ft., T.D. 3,399 ft.

Carlinville North, Macoupin County: F. Mudgett 2 Goebelt, N½ SE NE SW 20-10n-7w, pumped 25 bbl., Pottsville 452 ft., T.D. 462 ft.

F. Mudgett 3 Goebelt, S½ SW NE SW 20-10n-7w, pumped 11 bbl., Pottsville 432 ft., T.D. 443 ft.

Clay City, Wayne County: Pure 1 L. G. Orr, W½ SW SW 12-1n-7e, pumped 75 bbl. oil and 21 bbl. water, 5,000 gal. acid, McClosky 3,088-95 ft., 3,100-10 ft., T.D. 3,127 ft.

I. W. Siegel 1 Riggs, E½ NE SW 26-2n-8e, dry at 3,087 ft., Glen Dean 2,468 ft., Hardinsburg 2,503 ft., Golconda 2,509 ft., Barlow 2,657 ft., Cypress 2,680 ft., Cypress sand 2,695 ft., Benoist 2,898 ft., Renault 2,950 ft., Aux Vases 2,968 ft., Ste. Genevieve 3,016 ft., Rosiclare 3,032 ft., McClosky 3,047 ft., Fredonia 3,057 ft.

Dupo, St. Clair County: Tarleton Oil 4 Reichart, E½ NW NW NW 34-1n-10w, pumped 130 bbl. oil and 20 bbl. water, 1,000 gal. acid, Trenton 690 ft., pay 697-744 ft., T.D. 749 ft.

Griffin, Wabash County: W. W. Gray 22-A fee, W½ SE NE SW 14-3s-14w, pumped 115 bbl., Cypress sand 2,504 ft., T.D. 2,540 ft.

Inman, Gallatin County: Oil Management 9 Egyptian Tie & Timber, SW SE SE 16-8s-10e, pumped 125 bbl., 35-qt. shot 2,404-22 ft., Cypress sand 2,399 ft., T.D. 2,425 ft., P.B. 2,422 ft.

Hoodville, Hamilton County: Texas 5 E. McDonald, NW SW NE 11-6s-6e, pumped 112 bbl., 10-qt. shot 3,048-58 ft., Aux Vases 3,040-58 ft., T.D. 3,061 ft.

Texas 6 K. Edwards, SE NE NW 11-6s-6e, pumped 14 bbl. oil and 10 bbl. water, 10-qt. shot 3,060-67 ft., 1,000 gal. acid, Aux Vases sand 3,050-64 ft., McClosky 3,154-58 ft., T.D. 3,270 ft.

Johnsonville, Wayne County: Shell 2-A Cisne State Bank, SE NE SW SE 22-1n-6e, pumped 238 bbl., 3,000 gal. acid, McClosky 3,147-57 ft., 3,165-67 ft., T.D. 3,228 ft.

Shell 2 J. Williams, N½ SW SW 22-1n-6e, flowed 1,645 bbl., 3,000 gal. acid, McClosky 3,163-73 ft., 3,179-83 ft., T.D. 3,235 ft.

Wiser Oil 2 L. E. Hilliard, N½ SE SW 23-1n-6e, pumped 189 bbl., perf. 3,138-58 ft., 3,160-64 ft., 5,000 gal. acid, McClosky 3,138-58 ft., 3,160-64 ft., T.D. 3,192 ft.

Ill. Prod. Co. 2 C. O. Ray, N½ SW NE 26-1n-6e, pumped 175 bbl., 5,000 gal. acid, McClosky 3,179-87 ft., T.D. 3,187 ft.

Texas 1 A. Case, N½ SE NW 28-1n-6e, flowed 320 bbl., 4,000 gal. acid, Ste. Genevieve 3,089 ft., saturation 3,121-26 ft., T.D. 3,235 ft.

Ruwaldt 1 A. Knapp, S½ NE SE 35-1n-6e, pumped 490 bbl., perf. 3,205-09 ft., 4,000 gal. acid, reacidized 2,000 gal., McClosky 3,185-89 ft., 3,199-3,203 ft., T.D. 3,210 ft.

Olson Drlg. 2 A. E. Porter, W½ NW SE 36-1n-6e, pumped 22 bbl., 30-qt. shot 3,079-3,100 ft., 67-qt. shot 3,079-3,100 ft., 120-qt. shot 3,079-3,100 ft., Aux Vases 3,075 ft., T.D. 3,110 ft.

Olson Drlg. 2 H. States, E½ NE SW 36-1n-6e, pumped 23 bbl., 30-qt. shot 3,065-86 ft., 120-qt. shot 3,065-86 ft., Aux Vases 3,062 ft., T.D. 3,086 ft.

Olson Drlg. 3 Oglesby-Hopkins, W½ NE NW 3-1s-6e, pumped 500 bbl., 15-qt. shot 3,020-38 ft., Aux Vases 3,015 ft., T.D. 3,038 ft.

Olson Drlg. 4 Oglesby-Hopkins, E½ NE NW 3-1s-6e, pumped 480 bbl., 15-qt. shot 3,022-38 ft., Aux Vases 3,018 ft., T.D. 3,038 ft.

Keensburg, Wabash County: Zephyr Drlg. 2 Spencer, SE SE SW 17-2s-13w, pumped 298 bbl. oil and 12 bbl. water, 5,000 gal. acid, McClosky 2,761-68 ft., T.D. 2,774 ft.

Mill Shoals, Hamilton County: Cherry & Kidd 2 R. Gardener, NE SE NE 24-3s-7e, pumped 150 bbl., 20-qt. shot 3,229-49 ft., Aux Vases 3,233 ft., T.D. 3,254 ft.

Mill Shoals, White County: Pure 1-A W. B. Fox, NW SW NW 19-3s-8e, pumped 204 bbl. oil and 17 bbl. water, 46-qt. shot 3,238-56 ft., Aux Vases 3,230-47 ft., T.D. 3,261 ft.

Hudson-Hess 6 A. J. Poorman, NW SW NE 30-3s-8e, swabbed 682 bbl., 100-qt. shot 3,203-30 ft., Aux Vases 3,189 ft., T.D. 3,230 ft.

Hudson-Hess 7 A. J. Poorman, SW NW NE 30-3s-8e, pumped 92 bbl., 80-qt. shot 3,206-26 ft., 120-qt. shot 3,206-26 ft., Aux Vases sand 3,194 ft., T.D. 3,226 ft.

Hudson-Hess 8 A. J. Poorman, NW NW NE 30-3s-8e, pumped 400 bbl., 80-qt. shot 3,210-30 ft., reshot 80 qt. 3,210-30 ft., Aux Vases 3,194 ft., T.D. 3,230 ft.

Mount Carmel, Wabash County: Libernuht 1 Andruss, E½ NW NW SE 20-1s-12w, pumped 4 bbl. oil and 20 bbl. water, 40-qt. shot 2,030-35 ft., Cypress sand 2,030-35 ft., T.D. 2,035 ft.

New Harmony, White County: Haynes & Schnski, 2-G Hon, NW SW NE 9-4s-14w, pumped 41 bbl. oil and 4 bbl. water, 60-qt. shot 2,713-33 ft., Benoist 2,703 ft., T.D. 2,733 ft.

Superior 6 H. C. Ford, NW NW SW 23-4s-14w, pumped 125 bbl., Waltersburg and Cypress, perf. 2,116-26 ft., 2,588-2,600 ft., Cypress sand 2,588-2,605 ft., 2,647-61 ft., T.D. 2,661 ft.

Superior 3-A Greathouse, NW NE SW 34-4s-14w, flowed 650 bbl. from Aux Vases and McClosky, 120-qt. shot 2,814-45 ft., Aux Vases 2,812 ft., McClosky 2,839-45 ft., T.D. 2,845 ft.

Superior 18 H. C. Ford et al, SW NW SW 4-5s-14w, pumped 234 bbl. from Waltersburg and Benoist, 100-qt. shot 2,854-75 ft., perf. 2,179-98 ft., 2,720-30 ft., Waltersburg 2,179-98 ft., Benoist 2,720-34 ft., T.D. 2,945 ft., P.B. 2,870 ft.

Wabash O. & G. 6 Reeves heirs, SW NW SE 28-3s-14w, pumped 74 bbl., 50-qt. shot 2,560-75 ft., Cypress sand 2,558-75 ft., T.D. 2,579 ft.

North Benton, Franklin County: Luttrell et al 1 Dixon, NW SW NW 12-6s-2e, dry at 2,903 ft., Menard 1,967 ft., Glen Dean 2,210 ft., Golconda 2,313 ft., Barlow 2,471 ft., Paint Creek 2,563 ft., Aux Vases 2,722 ft., Ste. Genevieve 2,736 ft., Rosiclare 2,790 ft., Fredonia 2,844 ft.

Smokey Oil 1 Sisk, SW NW NE 1-6s-2e, pumped 212 bbl. oil and 200 bbl. water, natural, Aux Vases sand 2,689 ft., T.D. 2,700 ft.

Smokey Oil 1 Rosa Winn, NE NE SE 11-6s-2e, dry at 2,900 ft., Glen Dean 2,186 ft., Aux Vases 2,716 ft., Aux Vases sand 2,725 ft., Fredonia 2,853 ft.

(Continued on Page 78)

How to Conserve Utility Electric Power and Help Uncle Sam!

PROFIT BY USING Utility ELECTRIC POWER

There is an adequate sufficiency of Utility Electric Power for the petroleum industry's requirements in the Mid-Continent area.

But the day is here when it is vitally necessary to cooperate more closely with our government in the conservation of critical materials, as well as electric power itself, in an effort to properly fortify our country against any emergency.

This means that we must conserve on every possible pound of copper, steel, aluminum, zinc, and other materials required in the construction of new lines, which are more needed for the production of defense equipment.

Therefore, expansion of our services in the petroleum industry may not be as rapid as before, and we kindly ask that you be patient with us in the event new extensions and connections are desired.

If you are already a user of Utility Electric Power, here are a few friendly suggestions how you can help your government and at the same time cut power costs for yourself:

First, consult your electric power company's sales engineer for further information on how you can get the most for your electric power dollar. This can be accomplished by:

1. Keeping down maximum demand by scheduling production operations or by removing temporarily unnecessary loads during peaks.
2. Keeping records of power consumption for various departments and study them for possible ways of reducing consumption and peaks.
3. Selecting motor and control equipment suited to the drives.
4. Replacing old inefficient equipment with modern equipment.
5. Keeping shafting and other equipment in proper alignment.
6. Keeping pumps and compressors in good condition.
7. Keeping power-line insulation in good condition by periodic test and maintenance to avoid ground losses.

Remember that good maintenance methods always pay large dividends.

Use Utility Electric Power!

PETROLEUM ELECTRIC POWER ASSOCIATION

Pecos County Wildcat Makes Small Flow From Ordovician

By TOM BARBER

MIDLAND, Tex., Dec. 8.—A new Ordovician pool for West Texas—the fourth for Pecos County—was definitely opened last week by Gulf and L. H. Wentz 2 Millar. The test was bottomed at 4,363 ft. and, although no information has been released, was reportedly producing from the Ellenburger, Lower Ordovician, lime topped at 4,157 ft., 1,623 ft. below sea level. Operator cemented 7-in. at 4,282 ft. on top of the pay section.

Early in the week, 2 Millar was treated with 5,000 gal. of acid. Previously, the discovery was estimated good for 25 bbl. of oil daily, natural. After acid treatment, the test flowed 6.87 bbl. of fluid into storage in 15 minutes. Sixteen per cent was basic sediment and the remainder oil, with no water reported.

At the end of the week, operators were continuing to test in an effort to ascertain best production rate. Early estimates of 350 to 400 bbl. of oil daily have been lowered by operators to 75 bbl. daily. Gas volume was estimated at 6,000,000 cu. ft. daily.

No. 2 Millar is located in the NW NW SE Section 43, Block 11, H.&G.N. Survey, 4½ miles south of Girvin and 8½ miles northwest of the shallow Taylor-Link pool. The first attempt by Gulf and Wentz to find production in the area, 1 Millar, 1¼ miles south by southeast, found the Ellenburger lime completely cut out and was plugged at 4,538 ft., 2 ft. in granite.

Delaware Sand Discovery Deepened

In the Delaware sand basin of western Pecos County, Pure Oil Co. 1-A Frazier, Section 31, Block 49, Township 10, T.&P. Survey, was drilling below 5,268 ft. with 280 ft. of fluid in the hole. The test has been showing some oil since entering the Delaware sand at 5,082 ft. On last swabbing test, 1-A Frazier made 23 bbl. of fluid in 1¼ hours, cut 8 per cent by water. The wildcat prospect is 20 miles southwest of Fort Stockton.

Tubb Pool Extended ½ Mile

A ½-mile north extension for the southeastern part of the Tubb pool in western Crane County seemed definitely assured at the end of the week. The extension well is Gulf 33 Waddell, Section 20, Block B-26, P.S.L. Survey, which flowed 66.24 bbl. of oil in 1 hour and 10 minutes through 2-in. tubing from a total depth of 4,631 ft. The oil tested 35.2 gravity and gas volume was 897,000 cu. ft. daily.

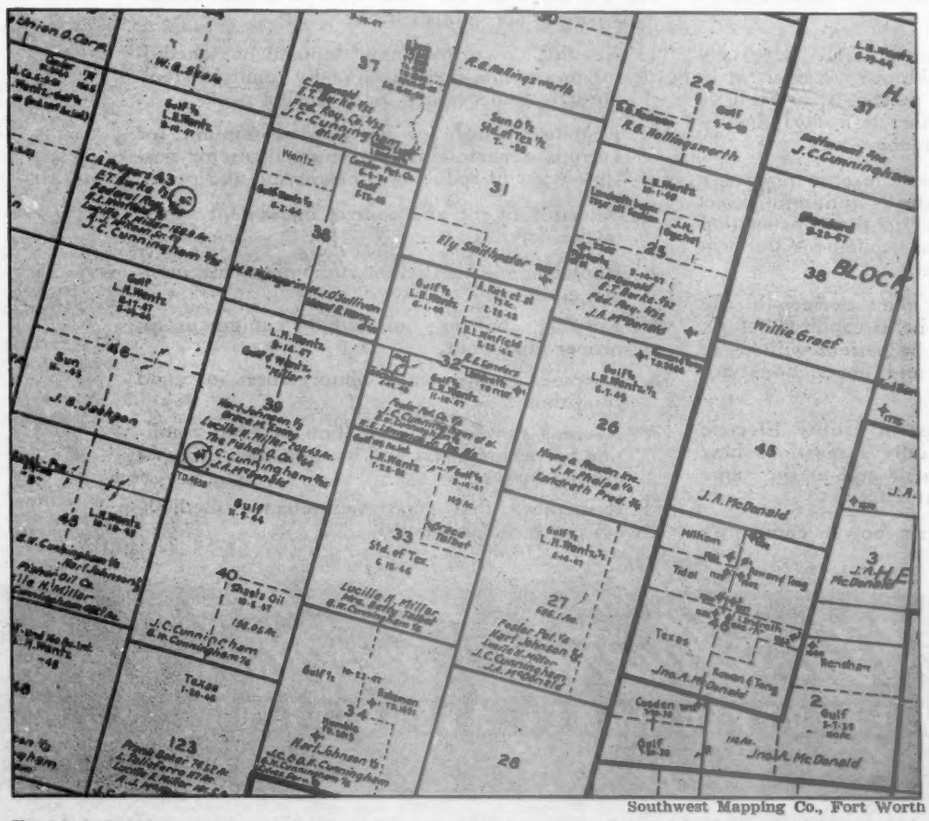
Humble 2-BX Tubb Testing Permian

The possibility of Ellenburger, Lower Ordovician, lime production southeast of the Sand Hills Ordovician field was lessened last week when Humble 2-BX Tubb flowed sulfur water from that section at 5,776-88 ft. However, the test is now being considered for oil production from the Tubb deep Permian lime.

Operator set packer at 4,411 ft. and gun-perforated casing from 4,300-4,400 ft. Failing to flow after being swabbed down, the test was treated with 1,000 gal. of acid and later with 3,000 gal. The hole filled with oil but would not flow and operator was unable to swab down the column of oil. At the end of the week, operator was moving off rig and may install flow valves in tubing. No. 2-BX Tubb is located in Section 19, Block 32, P.S.L. Survey, and is approximately ¾ mile southeast of the Sand Hills area.

Crockett County Outpost Has 1,500 Ft. of Oil in Hole

In the Fort Lancaster area of western Crockett County, Humble 1 Owens, 1½ miles northwest of the one-well Clara Couch pool, had a show of oil in a lime section at 1,904-09 ft. and bailed 3 bbl. of oil in 11 hours. With 5½-in. casing set at 1,904 ft., the outpost drilled ahead finding an increase of oil from 1,918-24 ft. and, as the week ended, was drilling below 1,968 ft. with 1,500 ft. of oil in the hole. No. 1 Owens is reported to have checked 30 to 40 ft. higher than the Henderson 1 Couch discovery well which is producing from the Permian lime at 2,180-86 ft. No. 1 Owens is located in Section 8, Block GG, H.E.&W.T. Survey.



Southwest Mapping Co., Fort Worth

The fourth Ordovician pool for Pecos County was opened this week by Gulf and L. H. Wentz 2 Millar. Producing from the Ellenburger lime, logged at 4,157 ft., the well is estimated good for 75 bbl. of oil daily by operators. Testing operations are continuing in an effort to find the best production rate

SUMMARY OF COMPLETIONS

Southern West Texas

	No.	Bbl.	Footage
Oil wells: Abell	2	2,633	10,875
Dune	2	227	6,248
Foster	4	2,939	16,895
Goldsmith	2	1,979	8,478
Keystone	2	567	6,720
North Cowden	3	1,518	14,277
Other fields	7	2,257	19,245
Gas wells: Noelke	1	*30	1,500
Dry holes: Fields	4	.....	13,342
Wildcats	1	.....	2,976
Total	28	.....	100,550

Northern West Texas

	No.	Bbl.	Footage
Oil wells: Emma	2	2,115	8,550
Seminole	3	1,183	15,910
Slaughter	19	24,074	95,407
Wasson	2	839	10,351
Other fields	2	704	7,784
Dry holes: Slaughter	1	.....	5,110
Wildcats	1	.....	5,510
Total	30	.....	148,622

Texas Panhandle

	No.	Bbl.	Footage
Oil wells	13	2,796	38,306
Gas wells	5	*320.0	15,735
Total	18	.....	54,041

Southeast New Mexico

	No.	Bbl.	Footage
Oil wells	3	527	11,027

*Million cu. ft.

SOUTHERN WEST TEXAS COMPLETIONS

(24-hour rating based on last 3 hours of 6-hour gage)

Wildcat

Ward County: Standard 1 T. C. Harding, elev. 2,634 ft., dry at 2,970 ft.

Fields

Abell, Pecos County: Magnolia 3 Markey, elev. 2,392 ft., 1,549 bbl., ½-in. choke, top Simpson 4,860 ft., top Tulip Creek 5,085 ft., top McKee sand 5,386 ft., pay 5,425-30 ft.

Phillips 2 Rixse, elev. 2,396 ft., 1,084 bbl., ¼-in. choke, top Simpson 4,830 ft., top Tulip Creek 5,080 ft., top McKee sand 5,383 ft., pay 5,423-33 ft., T.D. 5,445 ft.

Apco-Warner, Pecos County: Anderson-Prichard 2 Boren, elev. 2,471 ft., dry at 4,858 ft., top Ellenburger 4,737 ft.

Anderson-Prichard 3 Boren, elev. 2,468 ft., small show, top Ellenburger 4,740 ft., plugging hole, lost swab, T.D. 4,956 ft.

Dune, Crane County: Wasomes Oil Co. 2-8 University, elev. 2,628 ft., 161 bbl., 2,000 gal. acid and 350-qt. shot 3,160-3,284 ft., T.D. 3,289 ft.

Cities Service 6 University, elev. 2,575 ft., 66 bbl. oil and 155 bbl. water, pay 2,810-2,939 ft., T.D. 2,959 ft., old well drilled deeper.

Foster, Ector County: Atlantic 15 Henderson, elev. 2,921 ft., 258 bbl., pumping, 410-qt. shot 4,095-4,203 ft., T.D. 4,260 ft.

Sinclair 1-D D. Johnson, elev. 3,029 ft., 824 bbl., 250-qt. shot 4,135-4,200 ft., T.D. 4,250 ft.

Sinclair 28-B Johnson, elev. 2,985 ft., 657 bbl., pumping, 480-qt. shot 4,095-4,220 ft.

Sinclair 26-D Johnson, elev. 3,033 ft., 1,200 bbl., 390-qt. shot 4,060-4,157 ft., T.D. 4,165 ft.

Goldsmith, Ector County: Gulf 376 Goldsmith, elev. 3,192 ft., 1,000 bbl., 4,000 gal. acid 4,189-4,259 ft.

Gulf 377 Goldsmith, elev. 3,140 ft., 979 bbl., 4,000 gal. acid 4,179-4,219 ft.

Halley, Ward County: Skelly 44 Halley, elev. 2,768 ft., 866 bbl., ⅝-in. choke, 255-qt. shot 2,760-2,890 ft.

Hendrick, Ector County: Gulf 189 O'Brien, elev. 2,705 ft., 36 bbl. oil and 19 bbl. water, pumping, 510-qt. shot 2,694-2,931 ft., T.D. 2,958 ft.

Johnson, Ector County: M. J. Delaney 8-A Johnson, elev. 3,013 ft., 452 bbl., 118-qt. shot 4,120-60 ft., T.D. 4,165 ft.

Keystone (Colby sand), Winkler County: Standard 34-12 Baird, elev. 2,933 ft., 399 bbl., 290-qt. shot 3,275-3,390 ft., T.D. 3,395 ft.

Texas 8 Campbell, elev. 2,886 ft., 168 bbl., 440-qt. shot 3,150-3,325 ft.

Lehn, Pecos County: Burk Royalty Co. 5-C Sullivan, elev. 2,442 ft., 84 bbl., ¼-in. choke, 100-qt. shot 1,685-1,712 ft., T.D. 1,737 ft.

McCamey, Upton County: T. P. Coal & Oil 48-A Lane, elev. 2,638 ft., 214 bbl., pumping, 2,000 gal. acid 2,151-87 ft.

McElroy, Upton County: Gulf 259 McElroy, elev. 2,783 ft., 242 bbl., 840-qt. shot 2,935-3,153 ft., T.D. 3,163 ft.

Noelke, Crockett County: Pittman 1-A W. T. Noelke,

ZC Accessibility

MEANS LESS DOWN TIME

FAIRBANKS MORSE "ZC" Pumping Engine

CHECK TIME AGAINST ANY COMPLICATED ENGINE

(complete service with simple tools)

- Adjust Connecting Rod Bearing.....30 minutes
- Clean Combustion Chamber of Carbon.....40 "
- Replace Cylinder Head Gasket.....20 "
- Grind all Valves.....60 "
- Clean or Replace all Piston Rings.....80 "
- Clean Crankcase Thoroughly.....25 "
- Change Magneto..... 5 "
- Adjust Valve Clearance.....None to adjust
- Service Water Pump, Radiator Hose, Thermostat.....None to service

TOTAL TIME REQUIRED FOR COMPLETE SERVICE: 3 HOURS

ACCESSIBILITY of working parts—the result of intelligent engineering—makes the Fairbanks-Morse ZC Pumping Engine one of the easiest engines to service.

Less Time in Down Time for service, measured in barrels of oil delivered, means earned dollars to the producer. Every working part of the Fairbanks-Morse ZC Engine is readily accessible to service with ordinary, simple tools... there is no unnecessary, *time-taking* dismantling —all effort is confined directly to the part needing attention.

Accessibility is only one of the many extra features built into the ZC Engine. Its proved dependability is responsible for industry-wide acceptance and popularity.

ZC Engines are operating in every major oil field with unsurpassed performance and economy. It will do the same for you.

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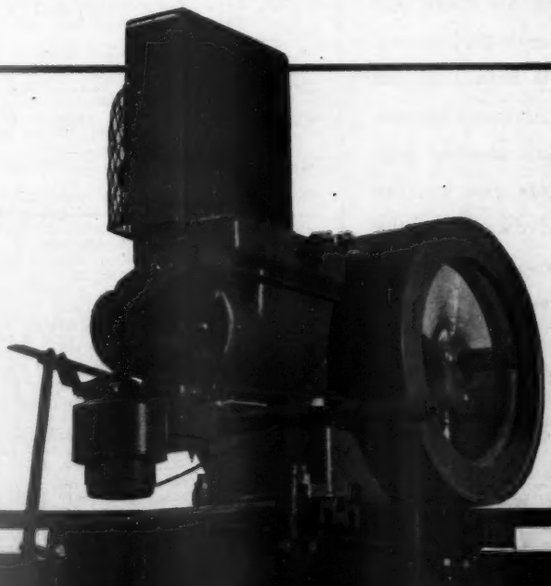

CONTINENTAL

SERVING THE OIL AND GAS INDUSTRIES

Dressers Win By Giving In
DRESSER COUPLINGS PROVIDE THE ONLY TIME-PROVED METHOD OF ABSORBING EXPANSION AND CONTRACTION
Advantage No. 3 of 12 Proved Advantages Listed in Box Below.

CHECK THESE 12 PROVED ADVANTAGES THAT ONLY DRESSERS GIVE YOU

1. Dresser Couplings eliminate all uncertainty in joint-making.
2. Dresser Couplings permit use of local, untrained labor.
3. Dresser Couplings provide the only time-proved method of absorbing expansion and contraction.
4. Dresser Couplings give greater speed.
5. Dresser Couplings simplify both pipe and joint specifications.
6. Dresser Couplings can be installed regardless of weather, wind, or rain conditions.
7. Dresser Couplings eliminate "fussy" operations.
8. Dresser Couplings permit pipe deflection for curves and grades with straight pipe.
9. Dresser Couplings reduce cost of supervision and inspection.
10. Dresser Couplings cut maintenance costs.
11. Dresser Couplings are fool-proof, strong, *permanently* tight.
12. Dresser Couplings eliminate health and fire hazards.

You stand to gain more by giving in to Nature than by fighting her. That is the principle that lies behind all sound engineering. And that is the time-proved feature of Dresser Couplings.

For these pre-fabricated, factory-tested flexible joints yield with Nature's every move. Therefore, the more Dressers you have on your line, the more resilient it is, the better protected against cracks, breaks, jump-aparts resulting from expansion and contraction, soil shifting, vibration, unequal back-fill, etc. Nor are there any harmful lowering stresses with Dressers. Assembly above ditch is both safe and practical. No bell-holes; narrower ditches. Installed speedily in any weather anywhere, anyplace. Dressers give you the *only* time-proved method of absorbing the stresses that might otherwise cause failures. Play Safe . . . Specify Dressers.

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DRESSER PIPE COUPLINGS

1891—NO OTHER JOINT HAS A COMPARABLE RECORD OF SERVICE—1941

elev. 2,794 ft., 30,000,000 cu. ft. gas, pay 1,492-1,500 ft.

North Cowden, Ector County: Arrow Drlg. Co. 3 Midland Farms, elev. 3,063 ft., 714 bbl., ¾-in. choke, 2,000 gal. acid 4,540-4,640 ft.

Stanolind and Magnolia 4 Holt, elev. 3,078 ft., 329 bbl., pumping, 810-qt. shot 4,470-4,740 ft., T.D. 4,857 ft.

Texas 17 Holt, elev. 3,117 ft., 475 bbl., 435-qt. shot 4,480-4,780 ft.

Taylor-Link, Pecos County: H. G. Eastham 1 University-Skelly, elev. 2,579 ft., dry at 1,710 ft.

White & Baker, Ector County: Cities Service 1-B White & Baker, elev. 3,053 ft., 383 bbl., ½-in. choke, 104-qt. shot 2,110-45 ft.

Wyatt, Crockett County: Stanolind 5-A Todd, elev. 2,594 ft., dry at 1,818 ft., old well drilled deeper.

NORTHERN WEST TEXAS

As activity in the Northern West Texas district slowed down last week, a Gaines County wildcat was being tested as a possible new pool discovery. Three miles southwest of the Wasson field, Amerada Petroleum Co. 1 Ruth Hudson drilled plug from 5½-in. casing set at 4,900 ft., and was testing a 22-ft. section which showed porosity and staining. The section was shot with 100 qt. of nitroglycerin from 4,952-5,000 ft., total depth, after which it swabbed 2½ bbl. of fluid, cut 4 per cent by basic sediment and water, in 5 hours. At the end of the 5-hour test, 1 Hudson was treated with 5,000 gal. of acid and, at last reports, was swabbing.

In drilling, the test logged traces of porosity at 4,952-71 ft. and porosity with staining from 4,978-5,000 ft. Originally contracted to 7,000 ft., 1 Hudson is located in the NW NW Section 60, Block AX, P.S.L. Survey.

Two Wildcats Are Dry

For the second consecutive week, wildcatting in the district suffered a double setback. The scheduled 3,200-ft. wildcat drilled by M. L. Richard at 1 Drum, Section 307, Block 97, H.&T.C. Survey, in Borden County, has been ordered plugged at 3,060 ft. No. 1 Drum logged a small show of oil from 3,040-48 ft. but, in drilling to total depth, filled with salt water.

The deepest wildcat ever drilled in Bailey County was shut down at 5,601 ft. in lime. The test, Broderick & Calvert, Inc., and A. G. Carter 1 Hayward, Labor 24, League 173, Sutton C.S.L. Survey, had encountered several water levels below casing point at 4,004 ft. and at total depth was carrying sulfur water.

No. 1 Hayward was correlated 130 ft. higher structurally on the San Andres lime than Humble 1 Fuqua, a failure 7 miles southwest. Operators drilled the test on a block of approximately 8,000 acres.

NORTHERN WEST TEXAS COMPLETIONS

(24-hour rating based on last 3 hours of 6-hour gage)

Wildcats

Lubbock County: Harrison & Foster 1 E. L. Steck, elev. 3,247 ft., dry at 5,510 ft.

Fields

Cedar Lake, Gaines County: Stanolind 2 Green, elev. 3,103 ft., 559 bbl., 528-qt. shot 4,650-4,830 ft.

Emma, Andrews County: Montecito Corp. 2 Cowden elev. 3,162 ft., 1,277 bbl., 1-in. choke, pay 4,180-4,275 ft.

Montecito Corp. 8 Cowden, elev. 3,138 ft., 838 bbl., pay 4,185-4,275 ft.

Seminole, Gaines County: Amerada 2 Northrop & Carr, elev. 3,418 ft., 83 bbl., ½-in. choke, 60-qt. shot 5,336-60 ft.

H. W. Bass 7 Austin, elev. 3,293 ft., 626 bbl., ½-in. choke, 172-qt. shot 5,090-5,205 ft.

Humble 5-B Blakemore, elev. 3,425 ft., 474 bbl., ½-in. choke, pay 5,150-5,345 ft.

Slaughter, Cochran County: Anderson-Prichard 4 Neal, elev. 3,686 ft., 1,112 bbl., 16,000 gal. acid 4,900-60 ft.

Atlantic 32 Boyd, elev. 3,651 ft., 1,544 bbl., 10,000 gal. acid 4,970-5,051 ft.

Devonian Oil 10-A Duggan, elev. 3,702 ft., 1,355 bbl., 2½-in. casing outlet, 12,500 gal. acid 4,990-5,054 ft.

Honolulu 1-16 C. S. Dean, elev. 3,718 ft., dry at 5,110 ft., treated with 4,000 gal. acid.

G. P. Livermore 14 Boyd, elev. 3,654 ft., 943 bbl., 15,000 gal. acid 5,011-46 ft.

Magnolia 5-A Mallett, elev. 3,655 ft., 1,145 bbl., 3-in. casing outlet, 10,500 gal. acid 4,945-5,010 ft.

Magnolia 1 Woodley, elev. 3,694 ft., 1,140 bbl., 3-in. casing outlet, 10,500 gal. acid 4,945-95 ft.

Magnolia 18 Woodley, elev. 3,691 ft., 969 bbl., 3-in. casing outlet, 10,500 gal. acid 4,960-5,010 ft.

Slaughter, Hockley County: Honolulu 12 Frazier, elev. 3,519 ft., 1,247 bbl., 2-in. casing outlet, 10,000 gal. acid 4,915-5,005 ft.

Honolulu 11-A Mallett, elev. 3,592 ft., 1,061 bbl., 2-in. casing outlet, 10,000 gal. acid 5,000-45 ft.

Honolulu 26-B Slaughter, elev. 3,532 ft., 1,245 bbl., 2-in. casing outlet, 10,000 gal. acid 4,940-5,030 ft.

Honolulu 29-B Slaughter, elev. 3,536 ft., 1,889 bbl. oil and 2 per cent water, 10,000 gal. acid 4,920-5,014 ft.

Stanolind 40-B Slaughter, elev. 3,531 ft., 1,062 bbl. oil and 3 per cent water, 11,500 gal. acid 4,945-5,025 ft.

Texas 12-B Mallett, elev. 3,590 ft., 1,165 bbl., 12,000 gal. acid 4,962-5,025 ft.

(Continued on Page 88)

Third Viola Lime Pool Found In Zenith-Peace Creek Trend

By ROBERT INGRAM

THE Zenith-Peace Creek Viola lime trend in Stafford and Reno counties was emerging last week as a probable series of pools rather than a single big field that might eventually spread over many miles. While a new Viola lime pool was opened 1½ miles northeast of Peace Creek, a northeast outpost at the Zenith pool found the Viola structurally low and was generally believed to have defined that field and cut it off from a possible link with Peace Creek.

Importance of the trend was not lessened by the development, however, since the Zenith pool is already one of the largest in western Kansas and the Peace Creek pool is growing rapidly with good flowing wells from the Viola. It was even considered possible that Peace Creek would connect with the new strike at F. B. Parriott and Leader Oil Co. 1 Tonn, SW SW 11-23-10w.

Still another mile northeast of Peace Creek, Central Petroleum 1 Hendrickson, W½ NW NE 2-23-10w, has some favorable showing from the Viola, but had not yet opened new production.

The 1 Tonn flowed 127 bbl. of oil through ¾-in. choke in 2 hours. The test was only temporary and no potential was taken. Earlier it filled to the top of the casing with oil 30 minutes after plug was drilled out at 3,760 ft. Viola lime was topped at 3,757 ft. Other tops were: Anhydrite 440 ft., Topeka 2,783 ft., Lansing 3,280 ft., and Kinderhook 3,655 ft. Oil tested 41 gravity.

The Central Petroleum 1 Hendrickson topped the Viola at 3,678 ft., found a soft zone from 3,678-95 ft. and had a show of oil from 3,713-17 ft. Operators set 5-in. casing at 3,714 ft., and were testing after drilling the plug with standard tools.

Producing limits of the Zenith pool were indicated by F. C. Hall and J. M. Kessler 1 Anderson, N½ NW SW 8-24-10w. It topped the Viola lime at 3,888 ft., drilled to 3,910 ft. with no showings and was given up.

Gusher Opens Kansas City Lime Pay in Barber County

Nine miles northwest of Lake City, in Barber County, Pryor & Lockhart 1 Massey, E½ NE NW 35-30-15w, flowed at an estimated rate of 125 bbl. an hour before it was shut in after spectacularly spraying oil over the crown block. It came in while casing was being perforated from below 4,342 ft. in the Lansing-Kansas City lime series and is the first production in in the county in that pay. Tankage is being erected for further testing.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Fields	21	24,023	65,191
Gas wells: Wildcats	1	*0.75	1,615
Dry holes: Fields	2	.....	6,712
Wildcats	3	.....	10,930
Total	27	.....	84,448

*Million cu. ft.

Two Barton County Pools Showing

Sinclair Prairie Oil Co. 1 Kowalsky, in S½ NW NW 36-16-11w, 1½ miles south of the two-well Hagen pool, in Barton County, had 1,900 ft. of oil in the hole after drilling plug in the Arbuckle at 3,377½ ft. and cleaning out to bottom of core hole at 3,384 ft. The fill-up was had in 12 hours and operators are moving in tanks to test and then will acidize. The test is 2¾ miles southwest of the Silica pool and 5½ miles south of Ellinwood.

H. M. Williams and J. J. Lynn 1 Kraft, in C S½ NW NW 36-16-11w, 1¾ miles east of the Kraft-Prusa pool, of Barton County, filled with oil when circulated after drilling plug in the Arbuckle at 3,355 ft. and acidizing. Operators, however, had to pull tubing after losing swab several times.

Gas Discovery Gaged

Central Petroleum Co. 1 Ward, SE SW 11-26-12w, a test which has been in process of completion for several weeks, was reported to have made an unofficial 2,500,000 cu. ft. of gas after perforating casing in the Voila lime from 4,108-19½ ft. and acidizing. Operators expect to take potential shortly. The test is 11 miles northwest of the Cunningham oil and gas pool.

Eight Wildcats Started

Eight wildcat tests were reported during the week, one each from Russell, Pratt, Sumner, Barber, Rooks and Norton counties and two from Rice County. They are:

Russell County: Central Petroleum 1 Leurman, C N½ NW SW 29-15-12w.

Pratt County: Aladdin 1 Wendell Burg, NW NE 5-27-11w.

Rice County: Nelson Drilling 1 Skyles, S½ SW SW 8-18-8w.

Luther Mackall 1 Willard estate, W½ NW NE 33-20-10w.

Sumner County: Waite Phillips 1 Forney, NW cor. 13-30-1w.

Barber County: Champlin Refining 1 Hildebrandt, E½ NE NW 26-32-15w.

Rooks County: Derby Oil and Crowe Drilling 1 Steele, N½ NW NW 9-6-20w.

Norton County: Cities Service 1 Muir, SE NW 34-5-21w, 4½ miles west of the Ray pool.

KANSAS COMPLETIONS

Wildcats

Barton County: Kiowa Drilling 1 Christiansen, E½ NE SW 17-20-12w, dry, T.D. 3,505 ft., anhydrite 665 ft., Fort Riley 1,760 ft., Florence 1,860 ft., Topeka 2,800 ft., Lansing 3,187 ft., base Kansas City 3,422 ft., Arbuckle 3,467 ft.

W. C. Jackson et al 1 Smith, SW SE SW 6-20-15w, cellar and pits, abandoned.

Central Petroleum et al 1 Brewer, W½ SW NE 23-20-14w, dry, T.D. 3,719 ft., anhydrite 906 ft., Florence 2,060 ft., Topeka 2,895 ft., Lansing 3,337 ft., conglomerate 3,595 ft., Arbuckle 3,624 ft., show oil 3,668-72 ft.

Leavenworth County: Mosbacher 1 Locke, NE SW 19-9-21e, gaged 750,000 cu. ft. gas, Mississippi 1,407 ft., T.D. 1,615 ft., acid 1,408-25 ft., P.B. 1,416 ft., opens new gas area.

Rooks County: Cities Service 1 Catudal, SE SW SW 14-10-19w, dry, T.D. 3,706 ft., anhydrite 1,475 ft., Topeka 3,113 ft., Lansing 3,327 ft., conglomerate 3,602 ft., Arbuckle 3,676 ft.

Fields

Ainsworth, Barton County: Stanolind 4 Kultgen, W½ E½ NE 26-16-13w, potential 3,000 bbl. pumping, Arbuckle 3,395 ft., 5-in. 3,395 ft., acid, T.D. 3,397 ft.

Beaumont, Greenwood County: K. T. Weideman 12 Lewis-A, NW SW SW 25-27-8e, pumped 25 bbl., Mississippi 2,450 ft., 5-in. 2,450 ft., T.D. 2,452 ft.

Bemis, Ellis County: Cities Service 10 Collahan-B, W½ NE NE 25-11-17w, potential 3,000 bbl. pumping, Arbuckle 3,384 ft., 5-in. 3,385 ft., acid, T.D. 3,410 ft.

Bloomer, Ellsworth: Skelly 3 W. T. Smith, N½ SE NW 32-17-10w, pumped 610 bbl., Arbuckle 3,244 ft., 4-in. 3,250 ft., acid, T.D. 3,250 ft.

Cunningham, Pratt County: Skelly 3 Steffen-C, S½ SW NE 35-27-11w, pumped 1,048 bbl., Lansing 3,478 ft., 5-in. 3,480 ft., acid, T.D. 3,527 ft.

Eberhardt, Barton County: Vickers Petroleum 1 Herr estate-C, N½ NE SE 24-19-11w, flowed 2,790 bbl. oil and 210 bbl. water, Arbuckle 3,094-3,105 ft., 5-in. 3,365 ft., acid, perf., T.D. 3,365 ft.

Eldorado, Butler County: Cities Service 194 Wilson, NW NE SW 8-25-5e, old well, old T.D. 1,830 ft., P.B. 1,754 ft., in Lansing, pumped 40 bbl. oil and 70 bbl. water.

Cities Service 207 Wilson, NW SW NE 8-25-5e, pumped 35 bbl. oil and 74 bbl. water, Kansas City 1,982 ft., 7-in. 1,989 ft., acid, T.D. 2,046 ft.

Cities Service 120 Chesney, SW NE SE 21-25-5e, pumped 10 bbl., Kansas City 2,177-2,202 ft., 6-in. 2,171 ft., shot, T.D. 2,312 ft.

Cities Service 96 Stokes, SW SW NE 33-25-5e, pumped 13 bbl. oil and 74 bbl. water, Kansas City 1,945 ft., 6-in. 1,952 ft., acid, T.D. 1,999 ft.

Forest Hills, Russell County: Continental 1 Meier, NW SW NE 20-15-12w, dry, T.D. 3,338 ft., Arbuckle 3,322 ft.

Greenvale, Russell County: Cities Service 4 Cook, SW NE SE 4-15-12w, potential 731 bbl. pumping, Gorham sand 3,251 ft., 5-in. 3,252 ft., T.D. 3,279 ft.

Stanolind 2 Major, NW SE NE 4-15-12w, pumped 456 bbl. oil, 2 per cent water, Lansing 2,948-52 ft. and 3,005-24 ft., 8-in. 2,928 ft., acid, T.D. 3,255 ft., P.B. 3,053 ft.

Keesling, Rice County: Luther Mackall et al 4 Mitchell, S½ SE SE 4-20-9w, pumped 473 bbl., Arbuckle 3,240 ft., 5-in. 3,241 ft., acid, T.D. 3,242 ft.

West Kraft Prusa, Barton County: Skelly 1 Hoffman, W½ SW SW 18-16-11w, dry, T.D. 3,374 ft., Arbuckle 3,365 ft.

Lost Springs, Marion County: Ring-Mac 3 Kaiser, W½ SW SE 33-17-4e, potential 644 bbl. pumping, Mississippi 2,391 ft., 5-in. 2,365 ft., T.D. 2,393½ ft.

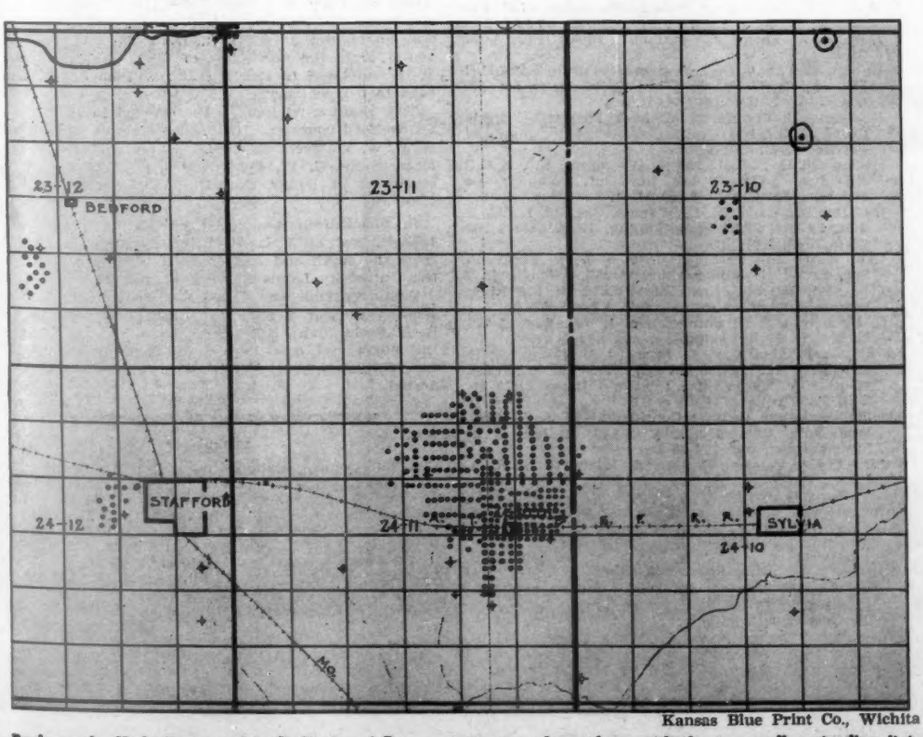
McLouth, Jefferson County: McLaughlin & Young 1 McLeod, NW SW 4-10-20e, old well, old T.D. 1,596 ft., Mississippi 1,469 ft., T.D. 1,919 ft., Hunton 1,849 ft., dry (discovery well of McLouth oil).

Rice, Barton County: Cities Service 2 Rader, NE NW NW 12-19-11w, old well, old T.D. 3,357 ft., Arbuckle 3,226 ft., P.B. 3,290 ft., perf. and acid, pumped 24 bbl. oil and 456 bbl. water.

Silica, Rice County: Phillips 2 Wesley, N½ SW SW 35-19-10w, potential 3,000 bbl., pumping, Arbuckle 3,286 ft., 5-in. 3,286 ft., acid, T.D. 3,293½ ft.

West Silica, Barton County: C. E. Ash et al 2 Scheuffler, W½ NW NW 18-20-11w, pumped 1,431 bbl., Arbuckle 3,326 ft., 5-in. 3,327 ft., acid, T.D. 3,339 ft.

(Continued on Page 78)



Kansas Blue Print Co., Wichita

Pools on the Viola lime trend in Stafford and Reno counties are shown here with the two wells extending it to the northeast. Zenith is the big field in the center, while Peace Creek is the pool immediately northeast

Ellenburger Lime Is Fourth Pay Zone at Consolidated

By D. H. STORMONT

WICHITA FALLS, Tex., Dec. 8.—The fourth pay level for the Consolidated pool of Wilbarger County was opened last week by Consolidated Oil Co. 2-C George B. Ancell, which found oil production in a section of the Ellenburger lime. Saturated lime was logged from 4,260-92 ft. and, on a 3-hour test, 2-C Ancell flowed 96 bbl. the first hour, 92 bbl. the second hour and 93 bbl. the third hour, for an estimated 2,000 bbl. of oil per day.

The well is located in the NW SE NE Section 2, Block 7, H.&T.C. Survey. Nearest Ellenburger production is in the K.M.A. field approximately 4½ miles east.

Two Wildcats Log Shows:

Two More Testing

Two wildcats, one each in Foard and Archer counties, reported finding a show of oil during drilling operations, while two others, in Archer and Clay counties, were testing oil-bearing sections. In Foard County, Bruce Sullivan was cleaning out 1 McCoy, J. M. Seaton Survey, before drilling from 5,980 ft. to contract depth of 6,000 ft. No. 1 McCoy had circulation trouble at 5,980 ft. An electrical survey, which previously had been run to 5,921 ft., reportedly indicated possible oil zones from 5,581-86 ft. and 5,593-5,601 ft.

The Archer County wildcat which logged a show of oil is Golding & Cochran 1 Kunkel, B.B.B.&C. Survey, 2½ miles northeast of Olney. The test topped the Caddo lime at 4,689 ft. and drilled lime with stain and good oil odor from 4,691-4,746 ft. However, operator continued to drill ahead toward contract depth of 5,300 ft.

Testing of a section of the Caddo lime in the same county will soon be under way at Dr. Kenneth Van Allen 1 Elizabeth Kelly, Block 68, J. W. Harris Club Ranch subdivision, 5½ miles northwest of Archer City. Operator has perforated 7-in. casing opposite the Caddo lime from 4,933-55 ft.

In the Deer Creek sector of Clay County, Shell 1 Williams has been plugged back from the Ellenburger lime to test the Mississippi lime topped at 5,670 ft. Operator perforated 7-in. casing opposite the section from 5,668-90 ft. and treated the test with 3,000 gal. of acid. After the acid treatment, 1 Williams flowed 110 bbl. of the oil load and then died. Operator swabbed out 66 bbl. more of the load and at the end of the week was swabbing on bottom.

Three Wildcats Staked

An increase in wildcatting activity was noted for the second week as three tests were announced. Two locations were made in Jack County and one in Montague County. One of the two Jack County wildcats will be drilled by Joe Worsham 8 miles southeast of Jacksboro. The test is 1 Gertrude Sewell, a scheduled 4,000-ft. test. Location is in the SE cor. of a 150-acre lease in the D. Crenshaw Survey.

In the same county, 5 miles northwest of Jermyn, Parker & Elliott have staked 1 State-Stewart. Contracted to 4,400 ft., the wildcat is located in the NW cor. Section 2783, T.E.&L. Survey.

Deep exploration in Montague County added another test with Continental announcing location for 1 J. F. Yowell, a scheduled 7,200-ft. wildcat in the western part of the county. Location is 330 ft. from the north line and 660 ft. from the west line of SE NE Section 8, Limestone C.S.L. Survey. This location places the test 1½ miles northeast of Stoneburg and 1 mile north of Continental 1 Winder, which the firm is attempting to complete in the Nocona lime.

Archer County Discovery Gaged

A new shallow producing area on the extreme southern edge of the K.M.A. field in Archer County was definitely opened this week when C. H. Staley 22 Mangold, Block 30, P. Castleman Survey, the discovery well, was officially gaged. No. 22 Mangold pumped 143.52 bbl. daily, plus 7 per cent water. The well is bottomed at 1,735 ft. in the Gunsight lime with 7-in. casing set at 1,729 ft. Nearest Gunsight lime production is about 3 miles northeast.

SUMMARY OF COMPLETIONS

North Texas

	No.	Bbl.	Footage
Oil wells: Coleman	2	600	11,683
K.M.A.	7	1,509	19,490
Other fields	4	183	9,451
Miscellaneous pools	13	1,565	30,885
Wildcats	1	13	5,665
Dry holes: Throckmorton	1	.....	780
Miscellaneous pools	8	.....	12,856
Wildcats	2	.....	13,559
Total	38	.....	104,369

West Central Texas

	No.	Bbl.	Footage
Oil wells: Fields	5	525	9,021
Wildcats	2	30	8,335
Dry holes: Fields	1	.....	797
Wildcats	4	.....	7,339
Total	12	.....	25,492

NORTH TEXAS COMPLETIONS

Wildcats

Archer County: Phillips 1 H. Reilly, Jr., "Pendrey," Sec. 13, H.&T.C. Sur., dry at 6,355 ft.

Jack County: Alma Oil Co. 1 Sarah E. Maxey, Sec. 2, S.P. Sur., A-2233, 13 bbl. in 24 hr., pumping, top Caddo 4,430 ft., Ellenburger 5,555 ft., 15,500 gal. acid 5,255-5,425 ft., T.D. 5,665 ft.

Montague County: Benson Bros. 1 D. C. Riley, C. Ellis Sur., A-1146, dry at 7,204 ft.

Fields

Coleman, Archer County: Shell 5-A W. M. Coleman, Sec. 74, Lot 3, A.T.N.C. Sur., 146 bbl. bbl. in 6 hr., ¾-in. choke, est. 375 bbl., top Caddo 5,048 ft., 2,000 gal. acid 3,670-3,957 ft., T.D. 5,183 ft.

Coleman, Clay County: Shell 2 J. L. Willis, Sec. 5, T.&N.O. Sur., A-678, 59 bbl. in 6 hr., 13/64-in. choke, est. 225 bbl., top Caddo 5,922 ft., 3,000 gal. acid 6,264-6,435 ft., P.B. from 6,500 ft.

Fargo, Wilbarger County: Anderson-Prichard Oil Corp. 2 W. O. Anderson, Sec. 35, Blk. 15, H.&T.C. Sur., 61 bbl. in 8 hr., ½-in. choke, est. 120 bbl., 2,000 gal. acid 4,052-62 ft., T.D. 4,651 ft.

K.M.A., Wichita County: Hanlon-Buchanan 27-E Fassett & Tuttle, S.A.&M.G. Sur., A-582, 55 bbl. in 3 hr., ¾-in. choke, est. 225 bbl., 150-qt. shot 4,002-38 ft.

Hanlon-Buchanan 33-G Fassett & Tuttle, S.A.&M.G. Sur., A-572, 57 bbl. in 3 hr., ½-in. choke, est. 250 bbl., 140-qt. shot 4,031-71 ft.

Hammon, Hanlon-Buchanan 38-A Fassett & Tuttle, Sec. 1, E.T. Sur., A-76, 21 bbl. in 24 hr., pumping, pay 608-17 ft.

Bishop Oil Co. 3-E J. and J. Waggoner, Sec. 1, G.C. &S. Sur., A-782, 58 bbl. in 3 hr., pumping, est. 190 bbl., 50-qt. shot 3,881-94 ft.

R-G Drilling Co. 7 W. L. Warren, Sec. 32, K.W.V.F. Sur., 23 bbl. in 24 hr., pumping, 10-qt. shot 1,769-75 ft., T.D. 1,811 ft.

Tide Water and Perkins-Cullum 9 W. P. Ferguson, Sec. 2, W. H. Spillers Sur., A-257, 155 bbl. in 3 hr., est. 750 bbl., top K.M.A. 3,674 ft., top Ellenburger 4,298 ft., 3,000 gal. acid 4,288-4,375 ft.

C. F. Schram 2 F. Daume, Sec. 1, S.P. Sur., A-429, 50 bbl. in 24 hr., pumping, pay 682-84 ft.

Mathis, Jack County: P. C. Burns 1 M. Kemp, A. H. Lattimere Sur., A-363, 18 bbl. in 24 hr., pumping, 20-qt. shot 2,924-25 ft., top Palo Pinto 1,071 ft., T.D. 2,936 ft.

Nocona, Montague County: Continental 24 J. W. Rowland, John Chambliss Sur., A-123, 10 bbl. in 24 hr., pumping, pay 771-76 ft.

T.C.U., Cooke County: Dodson & Iglehart 2-B S. A. Lynn, Phillip Lynn Sur., A-1407, 35 bbl. in 24 hr., pumping, pay 1,059-88 ft.

Throckmorton, Throckmorton County: Owenwood Pool No. 3 19 A. M. Housley, Sec. 28, Comanche Ind. Res. Sur., dry at 780 ft.

Miscellaneous Fields

Archer County: Shappell Oil Co. 41 Grace Bell, Sec. 27, Clark & Plumb Sur., 10 bbl. in 24 hr., pumping, pay 978-98 ft.

Young & Woody 1-C G. P. Meade, Sec. 3, W. S. Blount Sur., A-13, dry at 1,327 ft.

Petroleum Producing Co. 24 R. H. King, Sec. 7. B.B.B.&C. Sur., A-48, dry at 1,270 ft.

Clay County: Johnson & Kouri 8 C. Y. Taylor, Sec. 56, Bacon subd., 85 bbl. in 24 hr., pumping, pay 1,122-41 ft.

J. B. Cunningham 3 J. P. Boddy, Sec. 1, H.&T.B. Sur., A-222, dry at 1,311 ft.

G. G. Golden 14-C First Texas Joint Stock Land Bank, Sec. 13, Thornberry subd., 30 bbl. in 24 hr., pumping, pay 1,115-32 ft.

Birdwell Oil Co. 12 R. E. L. Saner, Sec. 15, G.C.& S.F. Sur., dry at 1,350 ft.

G. G. Golden 2 P. Roap, Sec. 10, Thornberry subd., dry at 1,150 ft.

Harper & Knappenberger 7 Paul Bilbrey, Sec. 3, W. Wyatt subd., 25 bbl. in 24 hr., pumping, pay 1,169-80 ft.

Petroleum Producing Co. 1 W. M. McGregor, Sec. 30, Pratt pasture subd., dry at 1,541 ft.

Cooke County: Sinclair 7-B D. A. Cox, Sec. 59, Fannin C.S.L. Sur., 81 bbl. in 24 hr., pumping, pay 4,700-56 ft., T.D. 4,947 ft.

Kerlyn Oil Co. 2 Adelia Belcher, W. W. Crisp Sur., A-221, 25 bbl. in 24 hr., pumping, pay 2,209-30 ft., T.D. 2,515 ft.

Trumter Petroleum Corp. 1-B C. E. Stacey, J. Clark Sur., A-194, key well, T.D. 753 ft.

Kewanee Oil Co. 22-A J. A. Dennis, T. J. Moss Sur., A-736, dry at 1,360 ft., old well drilled deeper.

Jack County: Rankin & Elliott Producing Co. 2 W. T. Stewart, Sec. 2799, T.E.&L. Sur., dry at 3,547 ft.

Montague County: Stanolind 3 F. E. Hill, W. J. Wells Sur., 44 bbl. in 3 hr., ½-in. choke, est. 250 bbl., 3,000 gal. acid and 69-qt. shot 5,217-34 ft., top Ellenburger 5,336 ft., T.D. 5,436 ft.

Wichita County: C. F. Schram 1 Albert Daume, Sec. 1, S.P. Sur., A-429, 10 bbl. in 24 hr., pumping, pay 674-75 ft.

C. F. Schram 2 Albert Daume, Sec. 1, S.P. Sur., 10 bbl. in 24 hr., pay 676-80 ft.

Wilbarger County: Ross Robertson 1 W. T. Waggoner, Sec. 5, H.&T.C. Sur., 60 bbl. in 24 hr., pumping, pay 2,397-99 ft.

Young County: W. F. Palmer 6-D R. Campbell, Sec. 1484, T.E.&L. Sur., 9 bbl. in 24 hr., pumping, pay 894-906 ft.

Brolon Producing Co. 3 S. P. Taylor, Sec. 1965, T.E. &L. Sur., 248 bbl. in 3 hr., ¾-in. choke, est. 600 bbl., top Caddo 3,947 ft., pay 4,010-20 ft., T.D. 4,022 ft.

T. D. Humphrey 2 E. G. Williamson, Sec. 601, T.E. &L. Sur., 236 bbl. in 5 hr., est. 400 bbl., 3,000 gal. acid and 120-qt. shot 4,998-5,020 ft., top Caddo 3,990 ft., T.D. 5,054 ft.

Wildcatting Slump Reversed By Location of Five Tests

FORT WORTH, Tex., Dec. 8.—Wildcatting activity in the West Central Texas district, which for the last several weeks has been declining, was suddenly revived this week with the location of five new exploratory tests. Coleman County received two of the five new wildcats and Brown, Shackelford and Callahan counties, one each.

In Coleman County, G. Huffman has spudded 1 Dr. Bailey, 1,650 ft. from the north and 2,310 ft. from the west lines of Section 17, H.&T.C. Survey, 1¼ miles northeast of Camp Colorado and 3½ miles southwest of Echo. The wildcat will be drilled to 3,200 ft. to test the Ellenburger lime, unless oil or gas in commercial quantities is found at a shallower depth.

The other Coleman County wildcat was staked by Anzac Oil Corp. as 1 Ben Yarbough, 3 miles south of the town of Coleman. Exact footage of the wildcat was announced as 3,191 ft. from the east line and 100 ft. from the north line of the S. Crooks Survey. It is contracted to 2,400 ft. and will be drilled with cable-tool machinery.

Two shallow wildcats were reported in Brown and Shackelford counties. The Brown County wildcat will be M. W. Walker 1 F. C. Shields, located on a 50-acre lease in the G. W. Pentecost Survey, about 6 miles southwest of Bangs. No. 1 Shields is contracted to 1,500 ft.

In Shackelford County, Cecil Catlin will drill a 1,500-ft. test at 1 L. P. Rice. Location is 330 ft. from the south and east lines of a 190-acre lease in the University Lands Surveys 17 and 20.

Drilling permit was issued this week to the Rhodes Drilling Co. for a wildcat test to be drilled on the R. H. Seale lands. No. 1 Seale is located 330 ft. from the north and east lines of a 40-acre tract in the Lewis Johnson Survey. Contract depth was not reported.

WEST CENTRAL TEXAS COMPLETIONS

Wildcats

Callahan County: Kaltenbaugh & Boyd 1 J. W. McDaniel, 500 ft. from W and 1,100 ft. from S lines, Sec. 71, Comal C.S.L. Sur., dry at 370 ft.

Jones County: Ungren & Frazier 1 C. J. Peyton, Stephen M. Hale Sur. 251, dry at 2,640 ft.

Palo Pinto County: W. K. Gordan 2 E. T. Noland, Sec. 86, Blk. 3, T.&P. Sur., dry at 3,679 ft.

Shackelford County: L. P. Blosser, J. B. Matthews, Sec. 35, B.A.L. Sur., dry at 650 ft.

Stephens County: Christie Bros. 1 H. M. Donnell, Sec. 1208, T.E.&L. Sur., 25 bbl. in 24 hr., pay 4,210-15 ft., old well drilled deeper.

F. H. E. Oil Co. 2 J. Q. Corbett, Sec. 2, A. W. Corbett Sur., A-1971, 5 bbl. in 24 hr. and 3,500,000 cu. ft. gas, 5,000 gal. acid 4,009-79 ft., T.D. 4,120 ft.

Fields

Akard, Jones County: Petroleum Producing Co. 6 Dorothy Akard, Guadalupe Martinez Sur. 137, 105 bbl. in 24 hr., pay 2,135-40 ft.

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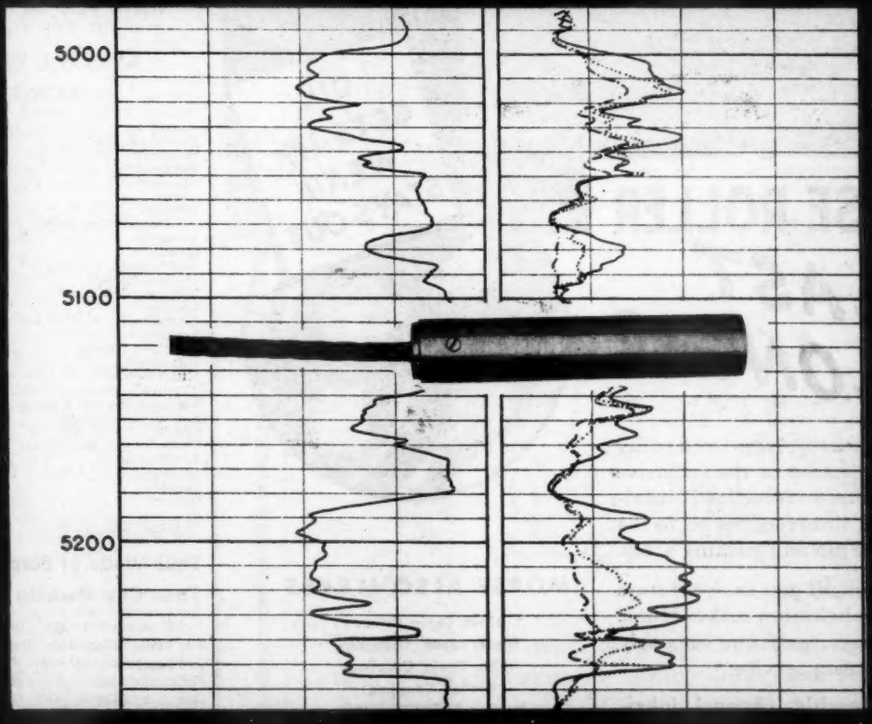

Albany, Shackelford County: C. B. Christie 4 W. D. Reynolds, Sec. 24, Blk. 11, T.&P. Sur., dry 797 ft.
Amity, Comanche County: L. H. Choate 14 H. R. Smith, Lot 3, Lampasas C.S.L. Sur. 34, 50 bbl. in 24 hr. 20-qt. shot 612-35 ft.
Cook, Shackelford County: Roeser & Pendleton, Inc., and Continental 7-A-117 W. I. Cook, Sec. 117, E.T. Sur., 71 bbl. in 24 hr., pay 1,700-11 ft.
Echo, Coleman County: Anzac Oil Corp. 3-F J. P. Morris, Sec. 73, H.&T.B. Sur., 49 bbl. in 24 hr., 40-qt. shot 2,198-2,215 ft., T.D. 2,230 ft.
Wimberly, Jones County: Foree & Sanford 1 O. J. Fikes, Lot 105, Godwin subd. of De Witt C.S.L. Sur. 126, 75 bbl. in 6 hr., est. 250 bbl., pay 2,277-2,305 ft.

Illinois Fields

(Continued from Page 70)

Parkersburg, Edwards County: Bander & Martin 1 Wells, E½ SW NE 31-2n-14w, flowed 2,052 bbl., 5,000 gal. acid, ripped casing 3,139-43 ft., McClosky 3,138-50 ft., T.D. 3,150 ft.
Rising Sun, White County: Cherry & Kidd et al 1 Ackerman, NE NW NW 24-6s-10e, pumped 122 bbl. oil and 5 bbl. water from Cypress and Tar Springs, perf. 3,198-2,209 ft., 20-qt. shot 2,563-68 ft., Tar Springs sand 2,204-14 ft., Cypress sand 2.568-77 ft., T.D. 2,950 ft., P.B. 2,568 ft.
Roland, White County: Fisher & Arrow 9 Ellis, SW SE SW 11-7s-8e, flowed 272 bbl., 80-qt. shot 2,820-2,907 ft., T.D. 2,916 ft.
Kingwood-Sinclair 1 Unit, SW NE SW 12-7s-8e, pumped 17 bbl., 40-qt. shot 2,884-2,904 ft., Aux Vases sand 2,888-2,914 ft., T.D. 2,917 ft.
Sinclair 3 J. B. Brockett, NW NW NW 13-7s-8e, pumped 20 bbl., 80-qt. shot 2,888-2,904 ft., perf. 2,564-72 ft., Aux Vases sand 2,882-2,900 ft., T.D. 2,907 ft.
Carter 1 V. McGill, SW SE NE 15-7s-8e, pumped 221 bbl., 10-qt. shot 2,170-73 ft., Waltersburg 2,169 ft., T.D. 3,089 ft., P.B. 2,183 ft.
Rural Hill, Hamilton County: Shoenfeld et al 3 Hamilton, NW NW SE 13-6s-5e, pumped and flowed 520 bbl., 40-qt. shot on bottom, Aux Vases sand 3,154 ft., T.D. 3,185 ft.
Shell 2-B L. F. Lockwood, SE NE SW 13-6s-5e, flowed 794 bbl., Aux Vases and Ste. Genevieve, perf. 3,230-50 ft., 2,500 gal. acid, reacidized 2,500 gal., 20-qt. shot 3,164-84 ft., Aux Vases 3,144-84 ft., Ste. Genevieve 3,188 ft., T.D. 3,348 ft.
Shell 1 C. A. Smith, NW NE NE 13-6s-5e, flowed 346 bbl. oil and 25 bbl. water, perf. 2,176-96 ft., 2,500 gal. acid, perf. 3,272-80 ft., 2,500 gal. acid, 15-qt. shot 3,115-30 ft., Aux Vases 3,084 ft., pay 3,094-3,130 ft., Ste. Genevieve 3,134 ft., pay 3,160-90 ft., T.D. 3,288 ft.
Texas 6 M. Lockwood, SW SE SW 13-6s-5e, flowed 1,205 bbl., perf. 3,292-3,300 ft., 3,000 gal. acid, perf. 3,197-3,215 ft., 3,000 gal. acid, McClosky 3,290-3,300 ft., 3,333-49 ft., T.D. 3,351 ft.
Oil Management 2 Lockwood, SE NW NW 23-6s-5e, flowed 79 bbl., 40-qt. shot 3,127-37 ft., 270-qt. shot 3,119-39 ft., Aux Vases 3,013-68 ft., 3,121-37 ft., T.D. 3,139 ft.
Storms, White County: Marshall 1 Brandt, SW NW NE 15-6s-9e, pumped 38 bbl. oil and 7 bbl. water, 20-qt. shot 2,814-28 ft., Benoist 2,807 ft., T.D. 2,832 ft.
A. H. Anderson et al 1 Leathers, S½ SW SE NE 22-6s-9e, pumped 9 bbl. oil and 27 bbl. water, 80-qt. shot 2,197-2,210 ft. in Waltersburg, T.D. 2,634 ft., P.B. 2,210 ft.
Walpole, Hamilton County: Tuesday Oil 3 H. H. Phillips, E½ NW SW 26-6s-6e, dry at 3,110 ft., Glen Dean 2,466 ft., Golconda 2,610 ft., Barlow 2,724 ft., Renault 3,048 ft., Aux Vases 3,066 ft.
Texas 1 Shavitz, E½ SW NE 27-6s-6e, pumped and flowed 440 bbl., 30-qt. shot 3,073-94 ft., Aux Vases sand 3,052 ft., pay 3,058 ft., T.D. 3,098 ft.
Woodlawn, Jefferson County: Magnolia 3 Kaminski estate, SE NE SE 2-3s-1e, pumped 219 bbl., 50-qt. shot 1,941-57 ft., Benoist 1,925 ft., T.D. 1,957 ft.
First Nat. Pet. Trust 3 E. H. Hall, SW SE NW 36-2s-1e, pumped 150 bbl., 20-qt. shot 1,980-91 ft., Benoist 1,981 ft., T.D. 1,991 ft.

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Kansas Fields

(Continued from Page 75)

Trapp, Russell County: Cities Service 4 Ochs, NE SW NE 23-15-14w, pumped 69 bbl., Arbuckle 3,371 ft., 5-in. 3,371 ft., acid, T.D. 3,373 ft.
Stanolind 2 Letsch-B, N½ SE SW 4-15-13w, potential 3,000 bbl. pumping, Lansing 2,992 ft., 5-in. 2,981 ft., acid, T.D. 3,008 ft.
Valley Center, Sedgwick County: Prunty Production 1 Wright, NW NW SE 12-26-1w, pumped 101 bbl. oil and 533 bbl. water, dolomite 3,336 ft., 7-in. 3,336 ft., acid, T.D. 3,338 ft.
Welch, Rice County: Westgate-Greenland 1 Harder, N½ NW SW 36-20-6w, pumped 45 bbl. oil and 21 bbl. water, Mississippi 3,360-66 ft., 7-in. 3,329 ft., butane, T.D. 3,415 ft., P.B. 3,376 ft.
Zenith, Stafford County: Deep Rock 3 Henry, E½ SW SW 3-24-11w, flowed 1,740 bbl., Viola 3,729 ft., 7-in. 3,750 ft., acid, T.D. 3,770 ft.
Hall & Landon 1 Porter, W½ SW SE 7-24-10w, flowed 1,802 bbl., Viola 3,714 ft., 5-in. 3,712 ft., acid, T.D. 3,726 ft.

AVERAGE DAILY PRODUCTION

LEADING KANSAS FIELDS

	Dec. 6	Nov. 29
Augusta	1,250	1,200
Bemis-Shutts	9,250	11,700
Bloomer	5,250	6,550
Burnett	11,750	10,850
Burrton	6,900	7,150
Chase	4,800	6,100
Elbing	950	900
El Dorado-Towanda	7,400	7,150
Geneseo	5,800	6,650
Graber	3,550	2,250
Greenwood County	9,100	9,000
Hollow-Nikkel	1,350	1,450
Keesling-Midway	1,450	1,150
Lerado	900	700
Lorraine	1,600	1,200
Oxford	500	450
Rainbow Bend	850	900
Raymond	1,850	1,450
Ritz-Canton	3,600	3,750
Trapp	20,150	21,400
Balance Russell County	25,600	27,050
Sedgwick County	2,900	3,050
Silica	18,050	21,800
Voshell	1,650	1,650
Wellington	800	800
Wherry	2,600	2,400
Zenith	9,900	12,100
Others	80,950	78,400
Total Kansas	240.700	249,200

Four Wells at Barada and Falls City Nearing Completion

ST. JOSEPH, Mo., Dec. 8.—Ohio Oil Co. was about to make Hunton lime tests in two more potential producers in the Falls City pool of Richardson County, Nebraska, last week. These were the Nos. 9 and 10 Bucholz. Skelly Oil Co. was completing its fourth well in the Barada pool of the same county—1 Steinbrink. Skelly was testing Hunton at 1 Merz in the same pool, had 4 Roesch drilling toward that lime and was preparing to start drilling at 5 Roesch.

Northwest of Salem, in Richardson County, Johnson & Short cored once without success in the Hunton lime at 1 Dowell and were pulling another core.

MISSOURI COMPLETIONS

Wildcats

Clinton County: Morgan Hammond 4 Vandereau, SE SW NW 18-55n-32w, dry hole, T.D. 522 ft.
Caldwell County: John C. Hart 1 Frazier, SW NW 27-56n-28w, dry hole, T.D. 420 ft.
Platte County: Missouri Valley Gas & Oil 3 Mothershead, SW NW SE 5-51n-33w, dry hole, T.D. 1,010 ft.

Another Field Along Salt Ridge Trend Is Indicated

By F. L. SINGLETON

NEW ORLEANS, La., Dec. 8.—Another gas-distillate field was expected to be opened in the Louisiana Gulf Coast district as Stanolind Oil & Gas Co. prepared to test 1 G. T. Tweedel, a wildcat located in the Lewisberg area, Acadia Parish. With the hole bottomed at 10,300 ft., casing was cemented for a production test of three sands shown by an electrical survey at approximately 9,400 ft., 9,600 ft., and 10,100 ft.

Side-wall cores of these sands are reported to have shown gas and distillate, but details as to their thickness were not revealed as little information has been released by the company. The well is located in 77-7s-3e, about 10 miles southeast of the Bayou Mallet field, and approximately the same distance northwest of the Bosco field.

Early geophysical work along this trend indicated an immense salt ridge running in a northeast and southwest direction from Jefferson Davis Parish through Acadia and St. Landry Parish. Several fields have been opened and a number of geophysical "highs" are to be drilled. The more recent discoveries along the trend include South Elton, North Tepetate and Bayou Mallet.

Another wildcat located along this same trend attracting considerable attention is Cities Service Oil Co. 1 Lacassine, located in the Thornwell area in 36-11s-5w. This well was reported the previous week as running 450 ft. structurally higher than Lisbon-Iberia 1 Calcasieu National Bank in the Lakeside area. During the week gas sand was cored at 9,633-45 ft., and the well is coring ahead in shale and sand below 9,669 ft.

Edgerly Deep Strike Delayed in Testing

Gulf 2 Miller, which may open deep sand production on the southeast of the Edgerly field, Calcasieu Parish, perforated casing at 9,028-66 ft., and on a 6-hour drill-stem test 940 ft. of oily mud and oil was recovered. While running tubing for a production test, the tubing became stuck, and completion of the well has been temporarily delayed. Sand and shale with an oil odor is reported to have been cored at intervals from 9,047-9,172 ft.

Lake Chicot Outpost to Test

In the Lake Chicot field, St. Martin Parish, Amerada and Phillips Petroleum Co. were preparing to test 2 State-Lake Chicot, about ½ mile from the discovery well. Total depth of the well is 9,500 ft., and a production test is slated to be made at approximately 8,100 ft., which is several hundred feet shallower than the discovery pay at 9,000 ft. The discovery well is reported to have logged several sands capable of producing oil, but no test was made other than the 9,000-ft. zone.

Four Rigs Running at Bayou Sale

In the Bayou Sale field, St. Mary Parish, Atlantic Refining Co. has moved in a second rig and is preparing to start 3 St. Mary Parish Land Co. located in the extreme southern part of the field, where the company recently opened a new sand at 10,200-10,300 ft. The company is drilling ahead below 3,500 ft. in 2 St. Mary Land Co., an offset to the company's extension producer. In the meantime, two wells being drilled by Humble Oil & Refining Co. are slated for early completion. The most advanced is 1-D Miami Co. on the extreme west side of the field which is drilling below the discovery pay at 10,100 ft. in search of production from the new sand, while 2 Canal Bank & Trust Co. is coring for the regular pay at 10,110 ft.

Gas Encountered by Hayes Area Wildcat

In the Hayes area, Calcasieu Parish, Gulf 2 Calcasieu National Bank is preparing to core below 11,712 ft., where excessive gas pressure is reported to have been encountered. This gas sand was encountered several hundred feet deeper than the company's initial test in the area which blew out and caught fire from a depth at 10,500 ft. This prospect has been looked upon as favorable for a number of years, and several deep tests have been drilled in the general area, all of which logged high-pressure gas sands, but no successful completion was ever made.

Second Well May Establish Value of Chenier Ridge Strike

In the Chenier Ridge field, and ¾ mile northeast of the discovery well, Phillips Petroleum Co. was running casing for a production test in 2 Miami Corp. Total depth of the well is 10,175 ft., and an electrical survey is reported to have shown favorable indications. The discovery well was completed for a small producer along with considerable salt water from sand at 10,194-10,200 ft., and the importance of the area may be revealed with the completion of this second well.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Fields	8	2,097	64,562
Dry holes: Fields	4	.....	30,966
Wildcats	1	.....	9,239
Total	13	.....	104,770

Southerly Development of Paradis Field Indicated

In the Paradis field, St. Charles Parish, 1 mile west of production, Humble Oil & Refining Co. has

(Continued on Page 82)

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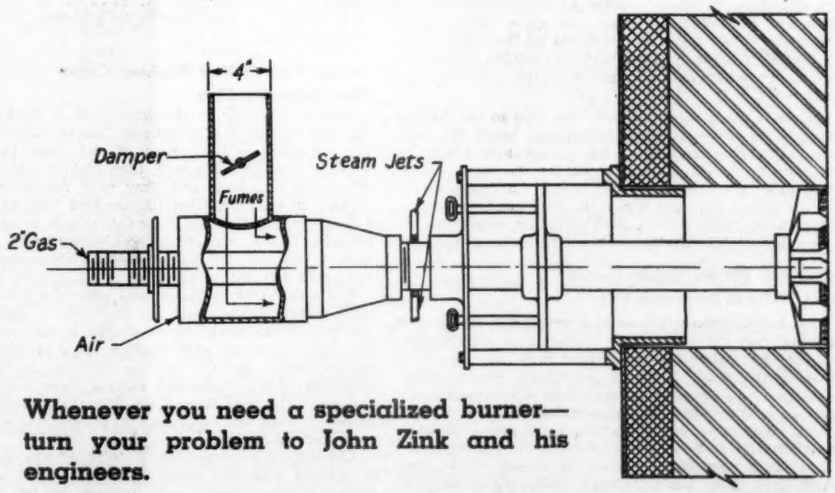

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Apache Trend Exploration Continues Despite Dry Holes

By ROBERT INGRAM

ABANDONMENT of three Texas Co. wildcats in Comanche County along the Apache trend apparently had done little to discourage exploration along the trend last week. A few days after Texas Co. announced abandonment of the third of its Comanche County tests, location was announced for a new test. Still another Apache trend wildcat—Denver Producing & Refining 1 Luella Hayes, NE NE SW 14-4-11w, northwest of Elgin—was drilling near 3,000 ft. after plugging back from 3,370 ft. to straighten the hole.

The new Texas Co. test is 1 G. V. Reich, NW NW NE 25-4-11w, also in Comanche County in the Elgin area. It was the fourth wildcat started by the company since discovery last summer of the Apache pool in Caddo County. Two weeks ago the company abandoned 1 School Land-A, SW SE NW 13-3-10w, southeast of Elgin, at 7,170 ft. Last week Texas 1 Gamble, SW NE SE 5-3-10w, southeast of Elgin, was abandoned at 6,271 ft., and Texas 1 School Land-B, SW SW 13-4-11w, 3 miles northwest of Elgin, was abandoned at below 5,227 ft.

Continued testing of the Apache trend by Texas Co. was to be expected in view of the lease block assembled along a northwesterly trend running through Comanche County and Caddo County covering thousands of acres. In addition, wells in the Apache pool itself were of major importance and the fifth producer, completed last week, was the largest to date.

It was 1 Mulkahay, SW NW SE 2-5-12w, on the southeast edge of the field. Pipe was set at 3,373 ft. on top of the pay, the hole carried to 3,942 ft. and fluid bailed down. In the first hour it flowed 195 bbl. of oil through a 1-in. choke. In the second hour it did an estimated 500 bbl. wide open through casing. When the big flow hit the two separators, there was a tremble and roar due to high pressure. No estimate was made on the gas, but volume was reported much greater than at the other four producers in the field, of which the highest was about 4,000,000 cu. ft. a day. The Wilcox, producing zone, was reported lower at 1 Mulkahay than at the discovery well, Texas 2 Smith.

There were 12 other operations in the field, two of them drilling below 3,100 ft. and two more just started. Two more producers were expected before the Christmas holidays to raise the field's allowable for January. December allowable was set at 2,500 bbl., a reduction of 500 bbl. a day ordered by the Corporation Commission because of an underproduction created in November when delay in getting tank cars retarded shipments.

Crude is being removed from the field to the Apache townsite, 6 miles away, through the Texas Co. pipe line, and there is loaded into tank cars. Champlin Refining Co. at Enid, Okla., is buying the crude. Meantime pipe was being strung along the right-of-way for the Texas Co. new line from the Apache townsite, through the Cement field to the Greater Seminole area where it will join the Texas-Empire trunk system.

Allowable Set for Upper Hoover Sand Wells at Oklahoma City

Last week, exactly 13 years after oil was discovered at Oklahoma City, the state Corporation Commission set the first allowable for a new zone on the north flank of the field. Wells in the Upper Hoover zone, effective December 6, were given an allowable of 225 bbl. per well per day for the remainder of the month. During that time engineers are to make a detailed study of well performance and reservoir conditions.

The order also provides that the allowable must be taken on a daily basis, and no underproduction will be permitted if wells fail to make the allowable.

Evidence presented at two hearings in Oklahoma City indicated that the upper section of the zone carries oil, while there is water in the lower portion. Wells now on production have tested between 400 and 1,100 bbl. of oil a day, all carrying from 50-60 per cent water in addition. The pay sand has a thickness of 20-30 ft. and is uniform both as to thickness and porosity. No recommendation was made as to setting casing. The zone is around 4,200 ft.

The commission continued the application of Anderson-Prichard Oil Co. for extension of the present spacing order (10 acres for oil wells, 40 acres for gas wells) to cover all of Section 15 and N½ 22-12-3w. The current order covers only SE 15-12-3w.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells	22	2,582	66,721
Gas wells	4	*13.79	10,657
Dry holes	12	.....	29,750
Total	38	.....	107,128

*Million cu. ft.

The zone was opened in July at Jim Clark et al 1 Proffitt near Northeast Thirty-eighth and North Phillips streets. Later Anderson-Prichard worked over its Slattery well for a producer and that company is now drilling one new well and working over several others. West of Lincoln Boulevard, Hugh Pierce and Neil Woodward are working over 1 Velma Woodward, an old producer in the deep dolomite zone on Northeast Forty-second Street. Outcome of this job will determine whether many of the old dolomite wells will be reconditioned in the upper zone. Deals are reported in the making for new exploration.

Play Starting in Cleveland County, Two Strikes Testing

A wildcat play, mostly for small local highs, got under way in northeastern Cleveland County with location of Luther E. Mayes 1 Mary Mayes, NE NE NW 33-10-1, and Luther E. Mayes 1 Mullman, NW NW NW 22-10-1. Mr. Mayes was reported working on at least one other well and Kenneth Ellison was planning a well for NE NE NE 28-10-1 while Phillips Petroleum Co. had a large lease block ready to test around the adjoining corners of Townships 8-1, 9-1, 8-1w, and 9-1w. . . . Shell Oil Co., Inc., continued testing 1 Bishop, NE NE SW 12-15-8, wildcat south of Bristow in Creek County, which was making gas and salt water from the Dutcher perforated at 3,088-91 ft. . . . Kerlyn Oil 1 Kirk, NW NE SW 1-8-4, wildcat in the Maud-Harjo sector of Pottawatomie County, was making a small discovery well from the Viola lime at 4,259 ft. . . . Near Seward, in Logan County, Continental Oil Co. was getting ready for development of its gas-distillate strike at 1 Leninger, SW SW 17-15-3w, by construction of a 7-mile gas pipe line to its gasoline plant in the Edmond field.

Second Well in New Stephens County Pool Makes Big Flow

Second producer in the new shallow field south of the Woolsey pool of Stephens County surprised both the operators and oil men of the state in general when it came in a big well, then kicked loose to crack off the tubing head and flow wild for several days. It was R. W. Fair, Glen Grimes and Tommy Vaughn 1-B Baker, SE NW NE 35-2s-6w, which showed for a producer only a week after the discovery well—No. 3-B Baker, NW SW NE 35-2s-6w—was completed for an estimated 100 bbl. a day from sand at 1,851-55 ft.

Pay was found in the second well at 1,770-1,839 ft., total depth. Casing was set at 1,770 ft. and tubing run late in the week. M. M. Kinley crews from Houston, Tex., shut the well in soon after it broke loose and at week's end crews were cleaning up the lease, pumping oil into tanks and making ready for a potential test. The well flowed 505 bbl. on a 5¾-hour test before it went out of control and then was estimated at a flow of 150-200 bbl. an hour.

Although the immediate vicinity of the new pool is spotted with dry holes, many of them were not drilled to the present pay, believed to be Arbuckle lime, and oil men were slow to evaluate the strike. Grimes et al have started 1 Holloway, SW SE NW 26-2s-6w, however, and plan at least two more wells. They hold about 700 acres in the area.

OKLAHOMA COMPLETIONS

Wildcats

Cotton County: W. I. Wynn et al 1 Cornelius, SE SE SE 34-3s-12w, location abandoned, surface casing 60 ft.

Logan County: Ellison and Diehl 1 Galvin, SE SE NW 27-15-3w, location abandoned.

Fields

Altus, Jackson County: Gulf 2 Fowler, NE NE SW 9-1-20w, dry, T.D. 2,723 ft., granite 2,715 ft.

Bebee, Pontotoc County: Lake Oil 1 Bullard, SE SE NW 31-5-5, pumped 45 bbl., Viola 2,490 ft., 7-in. 2,510 ft., shot, T.D. 2,673 ft.

North Bristow, Creek County: M. L. Marrs 1 Dressler, NE SE SW 16-17-8, pumped 25 bbl. oil and 9 bbl. water, Prue 2,332 ft., T.D. 2,348 ft.

Cement, Caddo County: Stephens 1 Thompson, SW SE NW 27-6-10w, dry, T.D. 5,505 ft.

Magnolia 9 Rowe, SW SW NE 36-6-10w, pumped 56 bbl., pay 3,233 ft., top Noble-Olson sand 3,175 ft., T.D. 3,250 ft.

Cumberland, Marshall County: Pure 2 Thomas-203, NE NW NE 28-5s-7e, flowed 101 bbl. through 1-in. choke on tubing, bromide 4,674 ft., first sand 4,959 ft., 7-in. 4,953 ft., T.D. 5,029 ft.

Pure 1 Thompson-108, SW NE NE 28-5s-7e, flowed 485 bbl. in 20½ hr., bromide 4,648 ft., first sand 4,946 ft., second sand 5,039 ft., 7-in. 4,937 ft., T.D. 5,070 ft.

West Davenport, Lincoln County: Liano 1 Richie, NW NE NE 32-15-5, flowed 10 bbl., 7-in. 3,526 ft., shot on bottom, T.D. 3,543 ft.

Ed Cox, Carter County: Samedan 9 Higgins-E, SW SE NE 7-2s-2w, pumped 35 bbl., pay 1,751-2,312 ft., 8¼-in. 2,370 ft., T.D. 2,728 ft., P.B. 2,312 ft.

Drilling 4 Horrell, NE SW NE 22-2s-2w, pumped 12 bbl., pay 985-1,164 ft., 6⅝-in. 985 ft., T.D. 1,225 ft.

Glenn Pool, Creek County: Sinclair Prairie 31 Berryhill, N½ SW NW 16-17-12, pumped 30 bbl., Glenn sand 1,396 ft., 7-in. 1,398 ft., T.D. 1,558 ft.

Hotulke, Pottawatomie County: Simpson-Fell 2 Billington, SE SE 24-9-4, flowed 175 bbl. through ⅝-in. choke, Viola 4,235 ft., 5-in. 4,237 ft., perf. 4,094-4,144 ft., T.D. 4,240 ft.

West Hotulke, Pottawatomie County: Sunray 2 Billington, SW SE SE 22-9-4, pumped 385 bbl. oil and 100 bbl. water, Viola 4,390 ft., 7-in. 4,603 ft., perf. 4,386-4,410 ft., acid, T.D. 4,685 ft.

Little River, Seminole County: Curd 1 Wood, SW NE SW 26-7-6, dry, T.D. 3,287 ft., Cromwell 3,220 ft.

Orlando, Payne County: Olean 1 U. S. Department of Agriculture-Howe, SE SE NE 11-19-1w, location abandoned.

Oscar, Jefferson County: O. V. Beck 12 Seay, NW SW SE 34-6s-5w, pumped 180 bbl. oil and 40 bbl. water, pay 1,335-43 ft., 7-in. 1,335 ft., T.D. 1,618 ft.

Rusk, Okfuskee County: Malernee 1-B Roberson, NW NE SE 7-11-8, flowed 642 bbl. oil cut 1⅛ per cent water, Cromwell 3,670 ft., 7-in. 3,675 ft., T.D. 3,694 ft.

Sasakwa, Seminole County: Eason & Grisso 2 Bryant, SE SW NW 7-6-8, pumped 60 bbl. in 12 hr., lower Calvin 1,198 ft., 5-in. 1,217 ft., shot 1,220-27 ft., T.D. 1,230 ft.

Sinclair 4 Davis-B, NW NE SW 7-6-8, T.D. 1,187 ft., Calvin 1,033 ft.

St. Louis, Pottawatomie County: Denver 4-A Decker, NW SW SE 8-7-4, dry, T.D. 4,233 ft., Hunton 3,702 ft.

Sinclair Prairie 4 Rice-B, SW NW NE 17-7-4, pumped 109 bbl. oil and 350 bbl. water, dolomite 3,994-4,028 ft., 7-in. 4,148 ft., perf., T.D. 4,156 ft.

Sinclair Prairie 2 Meyer, SE SE SE 32-7-4, old well, old T.D. 4,203 ft., dolomite 4,140 ft., acid, T.D. 4,278 ft., pumped 94 bbl. oil and 55 bbl. water.

Tecumseh Lake, Pottawatomie County: Stanolind-Amerada 1 Logan, NE NE 2-9-3, pumped 196 bbl., Wilcox 5,241-5,310 ft., 5-in. 5,350 ft., perf. 5,230-58 ft., acid, T.D. 5,375 ft.

North Terlton, Pawnee County: Selby Oil 5 Little, SW SW SE 1-20-7, 1,000,000 cu. ft. gas, 350 lb. R.P., Red Fork 2,320-40 ft., 6-in. 2,417 ft., T.D. 2,423 ft.

Tussy, Carter County: Batson 2 Moore, NW SE NE 5-1s-3w, pumped 80 bbl., pay 2,250-2,884 ft., 5½-in. 2,940 ft., T.D. 3,324 ft.

Velma, Stephens County: Skelly 2 Harmon-A, NW SE NE 27-1s-5w, pumped 25 bbl. oil and 2 bbl. water, pay 605-718 ft., 6⅝-in. 605 ft., shot, T.D. 718 ft.

Rocket 2 Mitchell, NE NW SE 36-1s-5w, dry, T.D. 776 ft.

Wetumka, Hughes County: Potco 1 Larney, NE SW SW 13-9-10, pumped 180 bbl. oil and 300 bbl. water, 7-in. 3,987 ft., perf. Viola 3,942-55 ft., T.D. 3,987 ft.

North Wewoka, Seminole County: Stanolind 2 Palmer, SE SW NW 33-9-8, gaged 10,500,000 cu. ft. gas, 820 lb. R.P., Hunton 4,135 ft., 5-in. 4,346 ft., P.B. 3,753 ft., perf. 3,440-50 ft., T.D. 4,383 ft.

Miscellaneous

Creek County: J. C. Williams 1 Steinman, NE NW NW 17-16-10, dry, T.D. 2,480 ft., Bartlesville 2,360-2,480 ft.

Brewer & West 11 Bartlett, SW NE NE 13-19-8, dry, T.D. 2,442 ft., Bartlesville 2,365-86 ft.

Kay County: Dave Morgan Oil 1 School Land, S½ SW SW 16-29-1, pumped 30 bbl. oil, Mississippi chat 3,421 ft., 5-in. 3,389 ft., T.D. 3,455 ft.

Burks Development 1 Ned Ross, NE SE 29-27-1w, dry, T.D. 975 ft.

West Virginia Oil & Gas 11 John Welsh, W½ E½ SW 17-28-1, old well, Stalnecker 2,247-54 ft., 8-in. 1,787 ft., T.D. 2,255 ft., pumped 15 bbl.

Fred Elders 1-A fee, NW NW SW 29-28-1, dry, T.D. 1,040 ft.

Tulsa County: Dunnington et al 5 Nipping, N½ SW SE 2-17-12, gaged 1,250,000 cu. ft. gas, 358 lb. R.P., T.D. 2,126 ft.

Turner 2-A Hagie, SE NE NE 11-16-12, dry, T.D. 1,467 ft., Glenn sand 1,433-67 ft.

Harry Geiger 7 Littlehead, W½ NW NE 33-18-12, pumped 4 bbl., pay 1,510-1,648 ft., 6-in. 1,581 ft., shot 1,592-1,647 ft., T.D. 1,655 ft.

H. H. Markey 23 E. Orcutt, SE NW SE 32-19-13, pumped 2 bbl., pay 886-1,005 ft., 6-in. 650 ft., T.D. 1,160 ft.

Lee F. Ross 1 Palmer, SW SE SE 4-21-13, gaged 1,043,000 cu. ft. gas, 750 lb. R.P., second Wilcox 1,724-25 ft., 6-in. 1,282 ft., T.D. 1,725 ft.

Fault Trap Field Is Opened Along Mount Poso Trend

By L. P. STOCKMAN

LOS ANGELES, Dec. 8.—Another new productive area was found in Kern County last week when Bradford Bishop completed 1 Poso in 22-27s-28e, pumping 185 bbl. of relatively clean 15.8-gravity oil daily from the Vedder formation of Miocene age at 1,434 ft. The new area is about 1 mile east of the Mount Poso fault, along which production is developed in the Mount Poso field, and the geology on which Mr. Bishop drilled the discovery well was predicated on the assumption that commercial production could be expected in a fault trap in the southeastern corner of 22-27s-28e.

Based on the number of wells drilled in the immediate locality the productive area should be relatively small. Vedder oil-sand production in the San Joaquin Valley, however, has been found quite prolific and for this reason the new discovery may ultimately prove larger than expected. Structural conditions are expected to be quite similar to other adjacent fields which without exception consist of commercial accumulations of oil behind a fault.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: San Joaquin Valley	5	253	8,730
Coastal district	3	1,574	16,222
Los Angeles Basin	6	665	21,527
Gas wells: Tupman	1	.....	5,540
Union Avenue	1	.....	4,240
Dry holes: Fields	2	.....	12,282
Wildcats	1	.....	4,500
Total	19	.....	73,041

Many fault traps have been found productive in Kern County along the rim of the San Joaquin Valley the most recent of which was the discovery of commercial production in the Dyer Creek area by Shell Oil Co., Inc., several weeks ago. Other productive fault traps in this region are Mount Poso, Round Mountain, Coffee Canyon, McVan, Dominion, the Vedder-Signal area north of Mount Poso, and a number of other smaller accumulations.

Bradford Bishop's discovery well in 22-27s-28e, is producing from 15 ft. of Vedder oil sand as the top of this zone was cored at 1,419 ft. The bit was still in oil sand when drilling operations were concluded, however, and for this reason the usual 30 to 50 ft. of oil sand may be present depending upon the location of the well on the structure. Obviously the greatest thickness of oil sand will be in close proximity to the fault and the smallest amount farther out on the structure. This discovery is of importance because of the demand for heavy grades of crude oil as contrasted with the excess amount of light refining grades available as a result of the discovery of new oil fields in other sections of the San Joaquin Valley. It is interesting to note that although Miocene production as a rule is of high gravity, formations of this age also produce heavy grades of crude oil.

Riverdale Test in Raisin City-Helm Area Gets Shows

One of the most interesting wildcat tests under way in California at the present time and one that is being watched with considerable interest is 45-26 Lawton of Amerada Petroleum Corp. in the Riverdale district of Fresno County. Riverdale is located about 15 miles east and south of the Helm field which Amerada Petroleum proved up as commercially productive a few weeks ago. The Raisin City field found by Shell Oil Co., Inc., earlier this year is situated about 9 miles north and slightly east of the Helm field.

Two important discoveries in such a limited area and in such a short time has focussed the interest of operators in the region. Amerada's wildcat in the Riverdale district has found several zones or intervals that may prove commercially productive. The well has been drilled to 8,150 ft. which is 250 ft. into the Eocene. Top of the McClure was logged at 5,345 ft., top of the Temblor was found at 5,615 ft., while top of the Kreyenhagen and Eocene were encountered at 7,610 ft., and 7,900 ft., respectively. Two sand bodies in the Temblor of middle Miocene age were cored at 6,700 and 6,900 ft., show promise and will be tested for production. The Eocene was found rather tight but reacts favorably in acetone. Because of Amerada's success in the Helm field, the outcome of drilling at Riverdale will be watched with considerable interest.

Tupman Gas Zone Proved Commercial

Richfield Oil Corp., discoverer of the Tupman field of Kern County and controlling operator of all but a small amount of productive acreage finished its second gas well in the Tupman gas sand early this week and has apparently proved that this zone has commercial importance. Richfield's new producer was 1-29-G Kern County Land in 29-30s-25e. While it is only credited with an initial of 9,000,000 cu. ft. this does not represent the well's maximum flow as only a small bean was used. This new well is producing from a 100-ft. zone through 2-in. tubing and shows shut-in pressures of 1,900 lb. on tubing and casing.

This gas zone has only been produced in two wells, both completed in 1941, although the existence of this gas sand was first determined in Richfield's discovery well. It is interesting to note also that Richfield has completed over 50 wells in the Tupman field and has not lost a single well as the result of a gas blowout.

Paloma Well Nearing Completion

In the Paloma field of Kern County, Western Gulf is making a water shutoff test in 12-7 Symons in 7-32s-27e and will probably have this well ready for a production test within another several days. Gulf's Symons outpost, which is located about 1 mile east of nearest production, is bottomed at 11,700 ft. and has 7-in. casing cemented at 11,265 ft. Production, when developed, will be from the Paloma zone.

The Symons outpost is outside the shaded area as originally proposed in the unit plan of development but will be brought into the revised plan upon completion. Heretofore all acreage in the revised unit plan has been property leased from Kern County Land Co. by Western Gulf, Texas Co., and Ohio Oil Co. with the exception of acreage owned by the Los Angeles Athletic Club and consequently the 40 acres around 12-7 Symons will be the first new acreage added.

Gulf has staked location for 16-6 L.A.A.C. in 6-32s-27e which will place the projected well due north of 12-7 Symons. The former, if completed as a good flowing well, will prove up a considerable portion of Section 1 to the west.

General Petroleum Corp. has location staked for 61-33 Gallagher in 33-31s-26e and early work is anticipated. This well, located in the extreme northwestern end of the area, will be an important test because its status will affect acreage held by Barnsdall Oil Co., Union, and possibly adjoining leases held by the Lloyd Corp. and Superior Oil Co. This will be the first outpost to be drilled in the northern end of the structure which is still undefined as far as the outer limits of production are concerned. Union Oil Co. drilled a deep dry hole along the southern edge of the field and in failing to develop commercial production defined the limits of the production to the south.

There has been no material change in the outlook of the Paloma field during the past several months except that Western Gulf will probably extend the productive limits in the east end of the structure and Union has disproved a few hundred acres to the south. The Paloma field still looks like a distillate field of major proportions especially in view of Gulf's discovery on the Symons lease as No. 12-7 still leaves the eastern limits of production open for further expansion.

SAN JOAQUIN VALLEY COMPLETIONS

Edison, Kern County: Monterey Expl. Co. 16 Shell-Duff, 15-30s-29e, pumped 40 bbl., 15.1-gravity, 2 per cent cut, T.D. 1,769 ft., perf. 1,699-1,769 ft., completed in Chanac oil sand of lower Pliocene age.

Elk Hills, Kern County: Standard 230 Tupman, 36-30s-24e, pumped 60 bbl., 20.8-gravity oil and 145 bbl. water, T.D. 3,133 ft., 60-mesh perf. 3,061-3,132 ft., completed in Tupman zone of Pliocene age.

Midway-Sunset, Kern County: Marvic Associates, Ltd., 1 Midway, 16-31s-22e, pumped 20 bbl., 13.1-gravity, 50 per cent cut, T.D. 1,171 ft., perf. 870-1,170 ft., completed in Etchegoin oil sand of Pliocene age.

Marvic Associates, Ltd., 2 Midway, 16-31s-22e, pumped 18 bbl., 12.5-gravity, 25 per cent cut, T.D. 1,223 ft., perf. 1,023-1,223 ft., completed in Etchegoin oil sand of Pliocene age.

Mount Poso, Kern County: Bradford Bishop 1 Poso, 22-27s-28e, pumped 115 bbl., 15.8-gravity, 5 per cent cut, T.D. 1,434 ft., perf. 1,419-34 ft., completed in Vedder oil sand of Miocene age 1,419-34 ft., bottomed in Vedder oil sand, completion extends productive limits of Mount Poso field.

Tupman, Kern County: Richfield 1-2-G Kern County Land, 29-30s-25e, flowed 9,000,000 cu. ft. gas, 32/64-in. bean, pressures 1,900/1,900 lb., T.D. 5,540 ft., perf. 5,445-5,537 ft., completed in Tupman gas zone located above Stevens oil sand of Miocene age, this is second completion in this dry-gas zone.

Union Avenue, Kern County: Hancock Oil Co. 3 Roberts, 6-30s-28e, flowed distillate spray and 600,000 cu. ft. gas, 5/64-in. bean, pressures 500/1,000 lb., T.D. 4,240 ft., perf. 4,200-40 ft., completed in probable Chanac oil sand of Pliocene age.

Thirty Wells Drilled in One Year on Gun Club Lease

Signal Oil & Gas Co., after drilling 35 oil wells on the Bolsa Chica property in the Huntington Beach field of Los Angeles Basin in a little over a year, has temporarily suspended development work but will probably undertake some additional drilling early in 1942. This property was obtained by Signal Oil & Gas Co. about 18 months ago after it was found of no further use for a gun club. Bolsa Land Co., owner of the property, has decided to dissolve the corporation because of heavy taxes and the probability that further income levies will tend to defeat the objective of the company.

Under the plan the company will distribute 108 shares to stockholders who will in the future hold the property as tenants in common according to their pro rata stock interests. Bolsa Land Co. was organized in 1899 and the first lease of a part of the acreage was to Standard Oil Co. in 1920. This property was developed and then followed a period of inactivity. Later, in June 1940, a lease was made with Signal Oil & Gas Co. whereby the latter acquired a total of 990 acres. This lease is for a period of 40 years and under the provisions incorporated therein, Bolsa Land Co. operating as tenants in common, will receive a royalty of 36 per cent of all oil and gas produced and a large part of the remaining production after drilling and production costs have been deducted.

This 990 acres was the most sought-after parcel of proved acreage in southern California for a number of years but the Bolsa Land Co. sat tight for a long time and then leased to Signal Oil & Gas Co. The latter has done a splendid job in fulfilling its obligations and by drilling 30 wells in the first year exceeded its requirements. The property is being produced under curtailment and has a shut-in production of about 15,000 bbl. daily.

Several Wells Started in Torrance and Wilmington Fields

Considerable drilling is getting under way in the east end of the Torrance field in Los Angeles Basin and northwest of the Wilmington field and indications point to a continuance of this extension work. This drilling usually results in the completion of small wells from a zone equivalent to the Ranger zone in the Wilmington field. Production characteristics are almost identical, the quality of oil produced is the same and the stratigraphic depth correcates very closely. Five drilling wells are nearing completion in this region and a number of others are just getting under way. There is every reason to believe that production may ultimately be developed to within the productive contours of the Wilmington field as there only remains a comparatively small undrilled area between the two fields.

LOS ANGELES BASIN COMPLETIONS

Huntington Beach, Orange County: H. C. Morton 4 Brooks, 34-5s-11w, pumped 105 bbl., 21.5-gravity, 2 per cent cut, T.D. 3,940 ft., perf. 3,838-3,940 ft., completed in Middle zone of Pliocene age.

Long Beach, Los Angeles County: Shell 17 Cresson, 19-4s-12w, pumped 20 bbl., 23-gravity, 60 per cent cut, T.D. 2,526 ft., perf. 2,496-2,524 ft., completed in Alamitos zone of Pliocene age.

Shell 4 Wells, 29-4s-12w, pumped 119 bbl., 26.5-gravity, 7 per cent cut, T.D. 6,727 ft., perf. 3,435-60 ft., 3,490-3,520 ft., recompleted in Brown zone of Pliocene age.

Montebello, Los Angeles County: Brookner Oil Co. 1 Montebello, 1-2s-12w, abandoned as dry hole, T.D. 4,191 ft., drilled as shallow test but anticipated zone was not present.

Palos Verdes wildcat district, Los Angeles County: Newton Development Co. 1 Palos Verdes, 13-5s-15w, abandoned in basement schist, T.D. 4,500 ft., only minor showings of heavy oil, not tested.

Potrero, Los Angeles County: Basin Oil Co. 11 Potrero, 34-2s-14w, flowed compressor 98 bbl., 49.1-gravity, 0.1 per cent cut, 25,000 cu. ft. gas, 32/64-in. bean, pressures 75/100 lb., T.D. 3,899 ft., redrilled 3,891 ft., gun perf. 3,724-32 ft., drilled into fault 3,899 ft., P.B. 1,500 ft., redrilled to 3,895 ft., ran into old hole, P.B. 2,600 ft., redrilled to completion

depth, 3,891 ft., completed in Basin zone of Pliocene age.

Wilmington, Los Angeles County: Bolling Oil Co. 7 Harbor, 32-4s-13w, pumped 125 bbl., 15.6-gravity 4 per cent cut, T.D. 3,730 ft., perf. 3,030-3,390 ft. 3,470-3,730 ft., completed in Ranger zone of Miocene age.

M.A.K. Oil Co. 7 Harbor, 32-4s-13w, pumped 187 bbl., 16.1-gravity, 3 per cent cut, T.D. 3,750 ft., 100-mesh 3,497-3,750 ft., completed in Ranger zone.

Wilmith Pet., Inc., 4 Harbor, 32-4s-13w, pumped 130 bbl., 17.4-gravity, 5 per cent cut, T.D. 3,690 ft., perf. 2,907-45 ft., 3,020-3,125 ft., 3,165-3,280 ft., 3,470-3,570 ft., 3,650-90 ft., completed in Ranger zone.

Coastal District Wildcats Show Promise; Rain Slows Work

Drilling operations in the coastal district were slowed up a little this week due to inclement weather. This was especially true of work under way in the Newhall-Castaic region of western Los Angeles County although some rain also fell in the San Joaquin Valley. In the Castaic area, Texas Co. is nearing the 6,000-ft. mark in 1 Fernando and is still above the Miocene in which the productive Modelo zone is encountered.

This wildcat has had several promising showings in the Pliocene but none were of sufficient importance to justify the expectation of developing production. These upper showings are considered very favorable, however, and if a good sand body is found in the Modelo the well will bear watching.

Western Gulf has its 1 Wickham in 31-5n-17w flowing again after doing some remedial work and it appears to be cleaning up in good shape. It will be another several days before it is officially completed for the second time. This well is located on property on which Mariand Oil Co. drilled a shallow well a number of years ago. Mariand failed to go deep enough, however, and did not reach the Modelo zone.

Deep Test at Rincon Being Redrilled

Chanslor-Canfield Midway Oil Co. is increasing the scope of work in the Rincon field of Ventura County and will start work soon on 41 and 43 Hobson in 16-3n-24w, and 45-B and 10-C Hobson in 17-3n-24w. At present the company is working on 2-C, 3-C, and 9-C Hobson. Deep-zone development in this ifeld to date has been inconclusive although indications point to the possibility of developing small production below 9,000 ft. In 3-C Hobson, the deepest drilled hole in the Rincon field to date, the company has been obliged to redrill and recondition the hole. This well was carried down to 10,515 ft. but ran into mechanical trouble and the crews are now redrilling at 9,385 ft. The lower portion of this hole was not tested and while its potentiality was not determined the formation was just as tight as the part tested out. Much depends upon deep drilling in this field as the upper sands have failed to show large production.

East of the Rincon field, Continental Oil Co. is putting the finishing touches on 25 Grubb in the San Miguelito field and has started preparations to drill three additional wells on this property in the immediate future. The San Miguelito field, located between the Ventura Avenue and Rincon fields, is characterized by rough topography and for this reason Continental Oil Co. has been obliged to lay out its locations somewhat in advance in order to reduce development costs.

(Continued on Page 86)

AVERAGE DAILY PRODUCTION

	Dec. 6	Nov. 29
Wilmington	88,750	87,175
Midway-Sunset	51,500	42,025
Coalinga	40,025	39,975
Long Beach	39,125	39,250
Kettleman North Dome	39,100	39,925
Ventura Avenue	38,725	37,025
Huntington Beach	27,950	28,950
Dominguez	24,650	25,125
Santa Fe Springs	23,175	23,025
Santa Maria Valley	18,025	19,325

Louisiana Gulf Coast Fields

(Continued from Page 79)

renewed its drilling permit on the Manufacturers Record Publishing Co. lease in 18-14s-20e. Since the discovery of the field, development has followed a northward trend, but a test was recently started by the Texas Co., only 1,320 ft. from the Humble lease, which is due west of the discovery well, completed as a gas-distillate producer. All development thus far has been by the Texas Co., which has completed approximately 17 wells, having daily average production of approximately 3,700 bbl.

St. Gabriel Outpost Located

Location for an interesting well was recently announced for the St. Gabriel field, Iberville Parish, by George Echols. The well is to be drilled on the Southwood Riverside lease in 20-9s-2e, about ¾ mile from production in Ascension Parish.

Additional development was being started in the Catahoula Lake area, Rapides Parish, as Carter Oil Co. and Phillips Petroleum Co. prepared to spud 1 State in Catahoula Lake in 32-6n-3e. The location is about 10 miles north of M. H. Marr et al 1 Eota Realty Co., which continues to test the middle Wilcox at 5,149-54 ft. with meager results. The Marr well has attracted much attention to the area due to the encouraging showings logged in three sands in the Wilcox, and the progress of the Carter well will be watched with considerable interest. Leasing and royalty buying has become widespread as the result of the showings logged by the Marr test.

LOUISIANA GULF COAST COMPLETIONS

Wildcat

St. Mary Parish: Texas 1 State, Cote Blanche, top salt 9,220 ft., dry, T.D. 9,239 ft., salt.

Fields

Anse La Butte, St. Martin Parish: Crosby Drilling Co. 6 Republic Prod. Co., 242 bbl., 9/64-in. choke, T.D. 4,779 ft.

Bosco, St. Landry Parish: John F. Merrick 1 Trahan, dry, T.D. 8,113 ft.

Chacahoula, La Fourche Parish: Sun 11 Dibert-Stark and Brown Cypress Co., 221 bbl., ⅛-in. choke, perf. casing 7,220-43 ft., T.D. 7,427 ft.

Cameron Meadows, Cameron Parish: Burton-Sutton Oil Co. 2-B Cameron Meadows, dry, T.D. 4,804 ft.

Delacroix Island, Plaquemines Parish: Texas 2 State, 451 bbl., ¼-in. choke, perf. casing 8,965-70 ft., T.D. 10,522 ft.

Golden Meadow, La Fourche Parish: Texas 15 State, 88 bbl., 7/32-in. choke, perf. casing 2,670-2,702 ft., T.D. 2,810 ft.

Gueydan, Vermilion Parish: Pure 10 Alliance Trust Co., 217 bbl., ⅛-in. choke, perf. casing 9,860-80 ft., T.D. 9,936 ft.

Jefferson Island, Iberia Parish: Texas 8 Jefferson Island Salt Mining Co., 260 bbl., ¼-in. choke, perf. casing 8,080-8,130 ft., T.D. 8,237 ft.

Paradis, St. Charles Parish: Texas 3 Sunset Realty Co., 411 bbl., ¼-in. choke, perf. casing 10,248-55 ft., T.D. 10,455 ft.

Pine Prairie, Evangeline Parish: Texas 1 LeDanois Land & Stone Co., dry, T.D. 9,993 ft.

Ville Platte, Evangeline Parish: Texas 4 Norman, 187 bbl., ¼-in. choke, perf. casing 8,966-90 ft., T.D. 10,396 ft.

West Hackberry, Cameron Parish: O. G. Garvey 1 Porter Elender, dry, T.D. 8,056 ft.

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Tops in normal tool joint life amounts to about 18,000 feet of drilling in the Bryson, Texas, area—so tough is this district on unprotected joints. But illustrated at left is part of a string of integral tool joints rebuilt several months ago with high carbon and then hard-faced over the wearing surfaces with Coated Stoody Self-Hardening. *This string has now drilled between 24,000 and 25,000 feet of hole and is still good for several additional wells.* Tool joint life has been increased 150%—and by the time the hard metal deposits completely wear away will approximate 200%!

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STOODY COMPANY *Hard Facing Alloys*

Tensleep Sand Is Objective in Lander-Cody Area Tests

By T. R. INGRAM

DENVER, Colo., Dec. 8.—Slight extension of the developed areas in two Wyoming fields were reported the past week. The Sinclair-Wyoming Oil Co. 5-F Mahoney, C NE NW 34-26n-88w, made 25 bbl. a day in the Tensleep at 4,536 ft., total depth. It is located on the north flank of the Mahoney dome, 1,320 ft. north of 3 Mahoney, which was completed in 1938 at 4,505 ft. for 511 bbl. in 15½ hours. While not a large well, it indicates that several hundred acres may be added to the productive area if the land within the contour upon which it is located proves to be equally as good.

SUMMARY OF COMPLETIONS

Wyoming

	No.	Bbl.	Footage
Oil wells: Fields	6	650	20,167
Dry holes: Fields	2	.....	3,457
Total	8	.....	23,624

Montana

	No.	Bbl.	Footage
Oil wells: Fields	3	283	7,547

The other extension was on the north side of Cole Creek in General Petroleum 53-16-S, which made 70 bbl. in the Shannon sand. It is ½ mile east of No. 3-16-S, which was rated at 200 bbl., and approximately the same distance northwest of the deep test which was drilled to the Sundance at 8,708 ft. in 1938 and abandoned. Last named was not, however, tested in the Shannon sand, which had shows on the way down. General Petroleum is drilling one well on Cole Creek which is a near completion and will conclude its 1941 campaign in that field.

Enalpac Oil & Gas 1 Custer, Oregon Basin field, reported a completion last week for 150 bbl. natural, improved considerably when put on the pump and made 450 bbl. in 24 hours.

Tensleep Sought at Two New Wyoming Fields

Husky Refining Co. has made a location on the Shoshone structure near Cody which will be watched with interest. Some 12 or 13 wells have been drilled on this dome, some finding oil in the upper horizons, but not in commercial quantities. In 1938 Paul Stock deepened 1 Rousseau, ½ mile to the north and west, from 3,850 ft. to the Embar at 4,756-4,800 ft. and completed it for 200 bbl. The new test may go to the Tensleep.

Continental 4 Shoshone Indian lease near Lander in the Circle Ridge field, less than ½ mile west of No. 3 which was completed a few weeks ago at 660 ft. for 191 bbl., was abandoned in the top of the red beds at 635 ft. The formations were almost on edge on that side. Another test will be drilled ⅛ mile south and a little east of the producer. This operation is to determine the extent and possibilities of the Tensleep horizon around the top of the structure.

Maverick Springs to Operate Through Winter

Operators in the Maverick Springs field expect to maintain the shipment of crude through the winter months as a result of construction now under way. Oil is being moved out by truck 55 miles to Riverton where it is loaded in tank cars. The road from the field to the south passes through a canyon which often is blocked during the winter. Goodstein, Neilson et al are laying a 7-mile 6-in. welded pipe line from the field through the canyon and the Indians are improving the road from the pipe-line terminal to the paved highway to Riverton. Loading racks are being constructed at the south terminal of the line and with these improvements completed it is believed shipments can be continued throughout the year.

WYOMING COMPLETIONS

Big Pole Cat, Park County: Yale Oil Corp. 1 Government, NW SE SW 9-57n-98w, T.D. 2,822 ft., sulfur water in Frontier, plugged and abandoned.

Circle Ridge field, Fremont County: Continental 4 Shoshone Indian, CWL SE NE 1-6n-3w, T.D. 635 ft., in top of red beds, dry and abandoned.

Cole Creek field, Natrona County: General Petroleum 53-16-S, NW SW NE 16-35n-77w, pumped 70 bbl. first 24 hr. from Shannon sand at 4,631-61 ft., 5½-in. 4,621 ft.

Frannie field, Park County: Continental 11-X Rosenberg, SE NE NE 26-58n-98w, T.D. 3,146 ft., top Embar 2,997 ft., top Tensleep 3,050 ft., 7-in. 3,025 ft., pumped 170 bbl. per day.

La Barge field, Sublette County: North La Barge Oil 3 Government, NW NE NE 17-27n-113w, T.D. 2,099 ft., 7-in. 1,966 ft., top Almy sand 1,972 ft., 10 bbl. a day on pump.

Mahoney field, Carbon County: Sinclair-Wyoming 5-F Mahoney, C NE NW 34-26n-88w, T.D. 4,536 ft., 7-in. 4,344 ft., top Tensleep 4,346 ft., pumped 25 bbl. per day.

Oregon Basin field, Park County: Yale Petroleum 2 Atherly, SW SW NW 33-51n-100w, T.D. 3,525 ft., top Embar 3,456 ft., flowed 325 bbl. in 24 hr. through ⅛-in. choke.

Osage field, Weston County: Federal Oil Co. No. 11, NW SE SE 15-46n-64w, T.D. 2,200 ft., Muddy 2,166-88 ft., pumped 50 bbl. a day after shot.

MONTANA COMPLETIONS

Cut Bank field, Glacier County: Glacier Production 1 Bailey, C NE SW 7-33n-5w, T.D. 2,958 ft., 7-in. 2,900 ft., Cut Bank sand 2,000-52 ft., main pay 2,937-52 ft., 2,000 ft. oil in hole, swabbed 184 bbl. first 24 hr.

Glacier Production 5 Corrigeux, C SW NW 28-33n-5w, T.D. 3,069 ft., 7-in. 3,038 ft., show oil in Sunburst 2,965-3,005 ft., Cut Bank sand 3 031-65 ft., main pay 3,055-65 ft., swabbed 91 bbl. first 24 hr.

Kevin-Sunburst field, Toole County: Prevol & Shay 10 Waite, NE SE NE 24-35n-2w, T.D. 1,523 ft., 7-in. 1,435 ft., pumped 8 bbl. an hr., first 6 hr.

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Basin Development Spreads to Indiana With New Strikes

By STAFF CORRESPONDENT

EVANSVILLE, Ind., Dec. 8.—Indiana oil activity continued to hold the interest of operators in the Indiana-Illinois basin area during the past week as a wildcat well in Sullivan County showed for a producer in the McClosky lime. At latest reports, rods and tubing were being run to test production at Sun Oil Co. 1 J. W. Queen, NE SE 17-6n-9w, where 1,000 ft. of fluid had risen in the hole. The Ste. Genevieve was topped at 1,287 ft. and a saturated zone was encountered in the McClosky at 1,325-29 ft.

The well is about 10 miles south and 4 miles west of the town of Sullivan. It is approximately 10 miles south of nearest production in the old Sullivan field.

SUMMARY OF COMPLETIONS

Indiana

	No.	Bbl.	Footage
Oil wells	7	467	12,515
Gas wells	2	*0.16	1,767
Dry holes	4	.....	5,998
Total	13	.....	20,280

Ohio

	No.	Bbl.	Footage
Oil wells	18	304	16,805
Gas wells	14	*10.2	36,788
Dry holes	18	.....	42,497
Total	50	.....	96,090

Eastern Kentucky

	No.	Bbl.	Footage
Oil wells	1	10	680
Gas wells	1	*0.2	2,517
Total	2	.....	3,117

Western Kentucky

	No.	Bbl.	Footage
Oil wells	2	122	2,928
Dry holes	2	.....	2,097
Total	4	.....	5,025

*Million cu. ft.

If the test is successfully completed, it will be the fifth pool opened in Indiana in recent weeks. There have been two recent discoveries in Posey County and two others in Gibson County.

Already the site of two pool openers within recent weeks Posey County made another bid for oil prominence last week after saturation was found in two formations at a wildcat well 3 miles south and some west of New Harmony, Sells Petroleum, Inc., 1 Elliott-Hickman, SW SE SE 15-5s-14w. Fourteen feet of Waltersburg sand saturation was recovered at 2,262-76 ft., but a drill-stem test showed only water. Water also was recovered in a drill-stem test of Hardinsburg saturation at 2,449-62 ft. A 50-minute drill-stem test was made of Palestine saturation at 2,060-66 ft. but no free oil was recovered. A light oil show was also encountered in Mansfield sand at 1,450-58 ft.

New Mount Vernon Field Scene Of Increasing Activity

In the new Mount Vernon field of Posey County, Sinclair-Wyoming has set casing at 2 Hageman, SW NW SE 1-7s-14w, at 2,464 ft. in Cypress sand. Total depth of the test is 2,485 ft. In addition to Cypress saturation, 2 Hageman found about 14 ft. of pay in the Waltersburg, the field's other producing formation. However, Sinclair-Wyoming 3 Hageman, NE NW SE 1-7s-14w, east offset to 1 Hageman, had only a light show of oil in the Waltersburg at 2,025-39 ft. and also recovered 4½ ft. of water sand from the formation. The test is drilling ahead at 2,121 ft. No. 1 Hageman, N½ NW SE 1-7s-14w, second producer in the field, still is not a completion. In a recent swab test of the Waltersburg only, the well made 267 bbl. in 24 hours.

Meanwhile, Carter and Gulf have staked locations for two more test in the field. They are 1 Erwin, SW SW NE 1-7s-14w, and 2 Erwin, SE SE NW 1-7s-14w. The discovery well, Carter-Gulf 1 Maier, N½ NE SW 1-7s-14w, is now pumping 750 bbl. daily from the Waltersburg and Cypress and 2 Maier, SE NE SW 1-7s-14w, is drilling below 2,300 ft.

INDIANA COMPLETIONS

Wildcats

Posey County: Sinclair-Wyoming 1 Kleinschmidt, SW SW SE 17-7s-13w, dry at 2,820 ft.

Lindas et al 1 Graulich, NW SE SW 13-7s-13w pumped 20 bbl. of 35.6° gravity oil, 20-qt. shot 1,124-33 ft., 40-qt. reshot 1,124-33 ft., Mansfield 1,118 ft., T.D. 1,133 ft.

Warrick County: George Hedges et al 1 Long, NE SW SE 35-6s-8w, location abandoned.

White County: Ohio 1 Horton heirs, NE NE NE 1-28n-5w, dry at 1,313 ft., St. Peter 1,256 ft.

Fields

Bufkin, Posey County: Central States et al 3 Breeze, SW SW SW 19-6s-12w, pumped 40 bbl., 20-qt. shot 1,097-1,113 ft., T.D. 1,113 ft.

Enterprise, Spencer County: Jarvis Bros. et al 2 Swallow, SE SW SE 32-6s-7w, dry at 1,040 ft.

Griffin, Gibson County: Hall-Edwards 5-B Maier, SE SE NE 14-3s-14w, pumped 50 bbl., 60-qt. shot 2,115-39 ft., T.D. 2,139 ft.

Continental 54 Bozeman, E½ W½ W½ 23-3s-14w, pumped 168 bbl., natural, saturated sand 2,156-70 ft., T.D. 2,170 ft.

Continental 17-A Kleiderer, NW NE NE 33-3s-14w, pumped 85 bbl., natural, reamed out casing 2,485-2,528 ft., T.D. 2,812 ft., P.B. 2,593 ft.

Hazleton, Gibson County: Kingwood et al 1 Potts, NW SE NE 26-1n-10w, pumped 100 bbl., 1,000 gal. acid, perf. 1,758-66 ft., T.D. 1,832 ft.

Merom & Raley, Sullivan County: W. T. Souers 1 Huff, NE NW SE 34-8n-10w, dry at 825 ft.

Oatsville, Pike County: Indiana Oil Prod. Corp. 9 Atkinson, SW NW 23-1s-9w, pumped 4 bbl., 15-qt. shot 1,310-16 ft., pay 1,310-16 ft., T.D. 1,316 ft.

Trenton, Decatur County: Hoosier Public Utilities, NE NW NW 11-9n-9e, 130,000 cu. ft. gas, 140-qt. shot 868-900 ft., Trenton 864 ft., T.D. 910 ft.

Trenton, Shelby County: Jacob Gahmeier 1 fee, NE NE NE 19-13n-8e, 25,000 cu. ft. gas, 30-qt. shot 847-57 ft., Trenton 847 ft., T.D. 857 ft.

OHIO

NEWARK, Ohio, Dec. 8.—Ohio fields continue active during the week. Gallia County yields a 2,600,000-ft. gasser from the Clinton horizon. The test is located east of Black Fork near the Gallia-Lawrence County line. Ashland and Lorain counties report fair gas wells.

In the eastern section wildcat tests in Ashtabula, Portage and Harrison counties were recorded as failures through the Clinton sand.

OHIO COMPLETIONS

Ashland County

Lake Township: Lyons et al 7 A. J. McClure, Sec. 10, dry, Clinton, T.D. 2,823 ft.

Jackson Township: Konrad & Beu 2 L. Franks, Sec. 22, dry, Berea, T.D. 702 ft.

Vermillion Township: Ray Stewart 1 R. R. Long, 3,100,000 cu. ft. gas, Clinton, T.D. 2,764 ft.

Ashtabula County

Richmond Township: Ohio Oil Co. 1 George E. Hatton, Lot 15, dry, Clinton 3,603-33 ft. and 3,686-3,736 ft., small show gas 3,628-33 ft., Red Rock 3,770-3,841 ft.

Cuyahoga County

Independence Township: Hoey & Cummings 2 M. Darrow, Lot 14, 400,000 cu. ft. gas, Newburg, T.D. 2,729 ft.

Gallia County

Cheshire Township: C. A. Cody 1 Charles Barton, Sec. 13, 150,000 cu. ft. gas, shot, second Berea, T.D. 1,708 ft.

Greenfield Township: Portage Producers 21 Cambria Clay Products, Sec. 18, 2,600,000 cu. ft. gas, Clinton 3,020-34 ft., T.D. 3,040 ft.

Harrison County

Monroe Township: Benedum-Trees 1 M. M. Chapman, Sec. 8, show oil and gas, shot did not improve, plugged, Clinton 5,420-61 ft., T.D. 5,614 ft.

Holmes County

Richland Township: Ohio Fuel 1 M. Allison, Sec. 5, 150,000 cu. ft. gas, shot, Clinton, T.D. 3,052 ft.

Knox County

Butler Township: H. E. Perkins 1 W. H. Lepley, Sec. 7, 320,000 cu. ft. gas, Berea, 872-947 ft. (previously reported as dry in Clinton, P.B. to save Berea gas.)

Union Township: H. E. Perkins 3 A. H. McMillen, show of oil, Clinton 2,838-77 ft.

Licking County

Perry Township: Armbruster & Stricker 1 B. Miller, Sec. 5, dry, Berea, T.D. 700 ft.

Lorain County

Huntington Township: H. C. Bishop 1 W. E. Jarvis, Lot 1, 1,200,000 cu. ft. gas, Clinton, T.D. 2,462 ft.

Medina County

Chatham Township: Thornton Producing Corp. F1 Daniel S. Ross, Tract 10, Lot 3, 5 bbl., Berea, T.D. 434 ft.

Thornton Producing Corp. F2 Daniel S. Ross, 5 bbl., Berea, T.D. 429 ft.

Thornton Producing Co. F3 Daniel S. Ross, 5 bbl., Berea, T.D. 455 ft.

Thornton Producing Co. F8 Daniel S. Ross, 5 bbl., T.D. 432 ft.

Thornton Producing Co. F9 Daniel S. Ross, 5 bbl., Berea, T.D. 437 ft.

Thornton Producing Co. F10 Daniel S. Ross, 5 bbl., Berea, T.D. 464 ft.

Thornton Producing Co. F15 Daniel S. Ross, 5 bbl., Berea, T.D. 434 ft.

Thornton Producing Co. F16 Daniel S. Ross, 5 bbl., Berea, T.D. 442 ft.

Thornton Producing Co. F17 Daniel S. Ross, 5 bbl., Berea, T.D. 468 ft.

Thornton Producing Co. F22 Daniel S. Ross, 5 bbl., Berea, T.D. 438 ft.

Thornton Producing Co. F23 Daniel S. Ross, 5 bbl., Berea, T.D. 435 ft.

Thornton Producing Co. F24 Daniel S. Ross., 5 bbl., Berea, T.D. 470 ft.

R. C. Holmes et al W19 A. B. and Mary Hostettler, Tract 14, Lot 10, dry, Berea, T.D. 524 ft.

R. C. Holmes et al W20 A. B. and Mary Hostettler, input, Berea, T.D. 491 ft.

R. C. Holmes et al W24 A. B. and Mary Hostettler, input, Berea, T.D. 506 ft.

Homer Township: Hoag et al 1 I. Q. Siler, Sec. 28 dry, Clinton, T.D. 2,870 ft.

Meigs County

Rutland Township: Nolan Shuster 5 Arthur Nelson, Sec. 22, dry, Maxon (water), T.D. 979 ft.

Scipio Township: C. W. Nuzum 1 A. M. Gilkey, Sec. 13, 1 bbl., first Cow Run, T.D. 228 ft.

Sutton Township: Roy Proffitt et al 1 D. C. Wickline, Sec. 9, dry, first Cow Run, T.D. 510 ft.

Monroe County

Perry Township: T. A. Drum 2 Clarence E. West, Sec. 29, 3 bbl. after shot, Berea, T.D. 2,124 ft.

Summit Township: Lucas & Thornberry 1 William J. Vess, Sec. 23, 50,000 cu. ft. gas, Berea, T.D. 1,895 ft.

Wayne Township: Harry & Russel Highman 1 G. B. Drake, Sec. 14, dry, lime, T.D. 1,339 ft.

Washington Township: H. B. Walker 15 W. S. English, Sec. 5, 1 bbl., Injun, T.D. 1,444 ft.

Morgan County

York Township: Industrial Gas Corp. 2 Theodore Eppley, Sec. 27, 400,000 cu. ft. gas, shot, Clinton, T.D. 4,165 ft.

Marion Township: W. S. Harris 3 W. C. Woodyard, Sec. 13, dry, Maxon, T.D. 984 ft.

Williams Bros. 1 J. E. Cheadle, Sec. 11, dry, Maxon, T.D. 950 ft.

Muskingum County

Blue Rock Township: Industrial Gas Corp. 2 R. H. Finley, Sec. 8, 200,000 cu. ft. gas, Clinton, 15 bbl., Medina, shot, T.D. 4,130 ft.

Noble County

Marion Township: H. G. Clymer 2 J. E. Guiler, Sec. 11, 100,000 cu. ft. gas, Berea, shot, T.D. 1,668 ft.

Noble Township: Fassette Oil 1 J. Hayes, Sec. 34, 10 bbl., Stray, (some water), T.D. 225 ft.

Wayne Township: Chaseville O. & G. Co. 2 Grace Gray, Sec. 7, 25,000 cu. ft. gas, Berea, shot, T.D. 1,351 ft.

Perry County

Clayton Township: Preston Oil 6 J. H. Cookson, Sec. 8, 214 bbl., shot, Clinton, T.D. 3,316 ft.

Jackson Township: Kisseling Drilling Co. 1 Klingler heirs, SW Sec. 13, dry, Clinton sand, T.D. 2,860 ft.

Monroe Township: Kachelmacher estate 22 Hemlock Coal Co., NW Sec. 30, dry, Clinton sand, T.D. 3,669 ft.

Reading Township: Preston Oil Co. 1 J. Miller, NW Sec. 5, 450,000 cu. ft. gas, Clinton sand, T.D. 2,810 ft.

Portage County

Edinburg Township: East Ohio 1 S. W. Anderson, Sec. 9, dry, Clinton 4,429-4,511 ft., small show gas 4,501 ft. and 4,508 ft., Red Rock 4,605-27 ft.

Tuscarawas County

Lawrence Township: Natural Gas of W. Va. 2 Charles Lebold, first quarter, 170,000 cu. ft. gas, shot, Clinton, T.D. 4,723 ft.

Washington County

Independence Township: Clift Oil & Gas Co. 2 Glen Clift, Sec. 33, dry, shales, T.D. 3,007 ft. (old well deepened from Berea at 1,750 ft.)

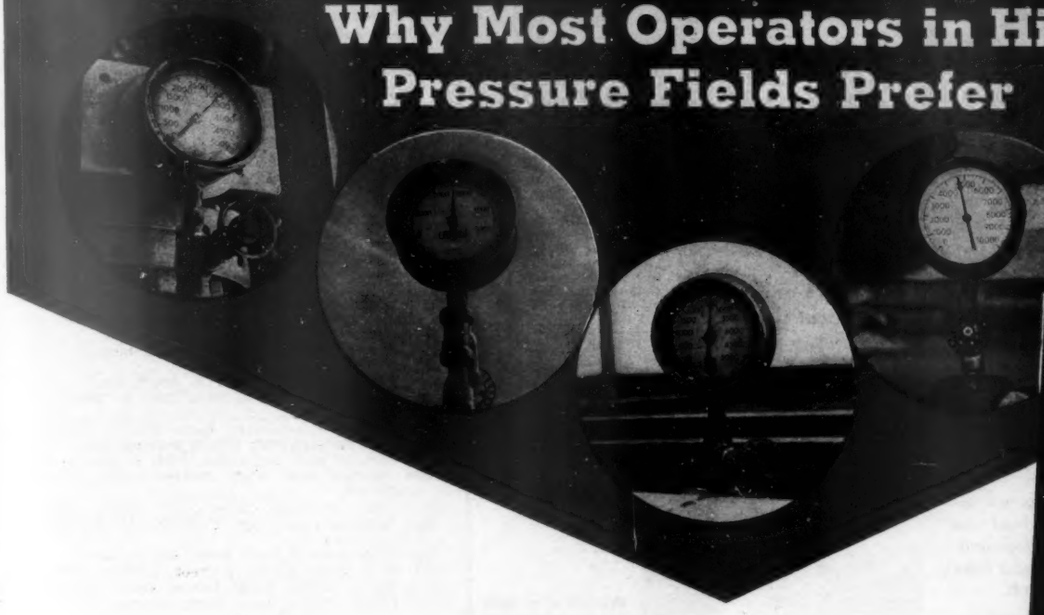
Liberty Township: Ridgeway & Patterson 1 C. E. Smith, Sec. 14, 30,000 cu. ft. gas, Germantown, T.D. 1,216 ft.

Wayne County

Plain Township: Ohio Fuel 1 Julia Armstrong, Sec. 33, 820,000 cu. ft. gas, Clinton, T.D. 3,134 ft.

Ohio Fuel 1 Merle Tuttle, Sec. 33, dry, Clinton, T.D. 3,048 ft.

Tubing Flow Pressures Like These Explain Why Most Operators in High Pressure Fields Prefer



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The extremely high tubing flow pressures recorded on the above Christmas tree gauges graphically demonstrate the need for a pressure-tight packoff between the tubing and oil string in deep, high pressure wells. These are but a few of the numerous high-pressure Gulf Coast wells in which Cameron Type "G" Circulating Anchor Packers have been set to relieve the oil string of dangerous pressures at the surface. Many of them are serving effectively in wells having bottom hole pressures in excess of 6000 lbs.

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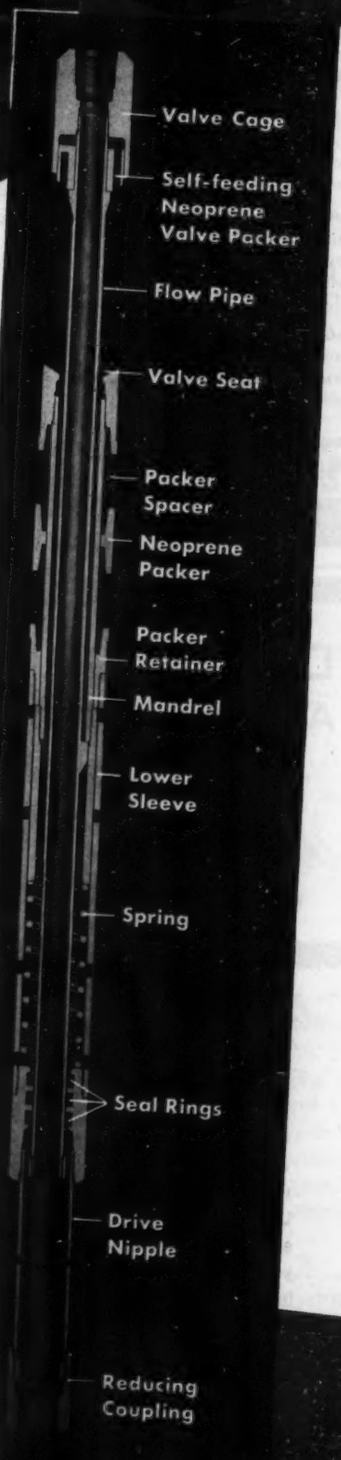
Any desired special data pertaining to the Cameron Type "G" Circulating Anchor Packer will gladly be furnished on request.



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• • •

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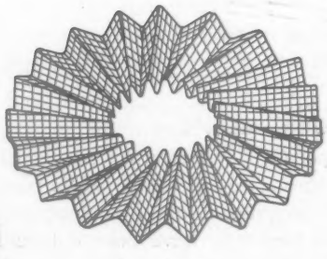
DEFENSE AGAINST DUST *with* DONALDSON *Oil-Washed* AIR CLEANERS



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EASTERN KENTUCKY OPERATIONS

ASHLAND, Ky., Dec. 8.—Completion of one oil well and one gas well are included in the report of eastern Kentucky activities. The general trend of operations remained about even, although two locations have been abandoned in the area. Two new locations were reported, however, and the information from local sources indicates a continuation of drilling at about the same level as at present.

Agatha Wireman has completed No. 27 on the J. M. Townsend land on South Fork in Powell County with a flow of 10 bbl. of oil per day at a total depth of 600 ft.

The Kentucky-West Virginia Gas Co. has completed No. 5348 on the David Martin tract, head of Right Beaver Creek, in Knott County, at a total depth of 2,517 ft. and has an open flow of 207,000 cu. ft. from shale at a total depth of 2,517 ft.

EASTERN KENTUCKY DRILLING OPERATIONS

Knott County

Inland Gas Corp. operations:
- 226 Hindman Settlement School, Smith Branch Carr Creek, 2,245 ft., Big lime.
- 229 Ben J. Slone, Left Fork Troublesome Creek, 1,523 ft., sand.

Kentucky-West Virginia Gas Co. operations:
- 646 Clarence King, Isaac Fork, 2,960 ft., Berea, fishing.
- 5328 William Thornsberry, Bates Branch, location.
- 5346 Thomas Hall, Dry Creek, moving tools.
- 5349 Richard Hall, Dry Creek, 2,939 ft., brown shale.
- 5338 Richard Hall, Right Beaver Creek, 1,350 ft., sandy lime.
- 5359 Henry B. Slone, Caney Creek, 185 ft., sand.
- 5362 Wilburn Pratt, Left Fork Troublesome Creek, 530 ft., slate.
- 5368 J. G. Sutton, Jones Fork, 634 ft., sand.
- 5371 F. C. Akers, Salisburg Creek, 1,240 ft., Salt sand.
- 5372 David Martin, Right Beaver Creek, location.
- 5374 Elijah Wallen, Jones Fork, moving.

Lee County

May & Aunyx 2 Rufus Jackson, Duck Fork, 200 ft.

WESTERN KENTUCKY

Christian County

Crofton district: Henry Myers 1 Kentucky Store Land Co., drilling at 940 ft.

Daviess County

Birk City district: Walter Sargent et al 2 Laura Hagan, E 52 acres, drilling 1,035 ft.

Pleasant Ridge district: W. K. Snyder 6 F. W. Jackson, drilling at 145 ft.

Henderson County

South of Hebbardsville: H. C. Farmer et al 1 Huber Hallmark, dry hole, T.D. 1,700 ft.

Ohio County

Aetnaville district: Elvis DeHart 6 S. L. Phillips, dry hole, T.D. 397 ft.

Fordsville district: John Tuttle et al 3 Grace Miles, drilling 203 ft.

Union County

Morganfield district: Ohio Oil Co. 1 Briscoe, 117 bbl., 20-qt. shot, Bridgeport sand 1,333½-45½ ft.

Sun Oil and Kentucky Natural 2 Susan McKinney, rigging up.

Uniontown district: Sinclair-Wyoming 1 George Vittitoe, rigging up rotary.

Webster County

Sebree district: I. B. Browning 1 N. M. Ashby, 5 bbl., McClosky sand, T.D. 1,582 ft.

Dixon district: Sun Oil and Kentucky Natural 1 T. J. Tapp, location.

California Fields

(Continued from Page 82)

It has not been definitely determined whether the San Miguelito and Ventura Avenue fields will join and prove to be one field as some suspect.

COASTAL DISTRICT COMPLETIONS

Cat Canyon, Santa Barbara County: Standard 3 Los Flores, 27-9n-33w, pumped 1,009 bbl., 14.5-gravity, 0.4 per cent cut, T.D. 6,100 ft., perf. 5,552-6,098 ft., completed in Cat Canyon oil sand of Pliocene age.

Oak Canyon, Los Angeles County: Hathaway Co. 2 Ram, 31-5n-17w, abandoned as dry hole, T.D. 8,091 ft., redrilled 2,745 ft., gun perf. 2.725-35 ft., no fluid recovered on test, first and second zones absent at this location.

Santa Maria Valley, Santa Barbara County: Pacific Western Oil Co. 7 Hobbs, 21-10n-34w, pumped 400 bbl., 16.5-gravity, 2 per cent cut, T.D. 4,822 ft., perf. 4,520-4,820 ft., completed in Monterey oil sand of Miocene age.

Union 8 Le Roy, 14-10n-34w, pumped 165 bbl., 16.8-gravity, 10 per cent cut, T.D. 5,300 ft., perf. 4,891-5,299 ft., completed in Monterey oil sand of Miocene age.

Ventura Avenue, Ventura County: British American Oil Prod. 12 Hartman, 21-3n-23w, flowed 344 bbl., 25.4-gravity, 10 per cent cut, 1,057,000 cu. ft. gas, 112/64-in. bean, pressures 100/625 lb., T.D. 10,325 ft., perf. 8,830-65 ft., 8,960-9,210 ft., 9,325-9,605 ft., 9,620-9,765 ft., 9,850-10,130 ft., 10,180-10,320 ft., recompleted after being deepened from 9,180 ft.

Three Counties Get Lease Play; Drilling Declines

By D. H. STORMONT

DALLAS, Tex., Dec. 8.—Activity in general throughout East Texas showed a marked decline last week. Failure was reported for five wildcats and location was announced for only one new test. The most active areas were in Navarro, Houston and Trinity counties where operators were busy assembling blocks and leasing acreage.

As a result of leasing, Navarro County is in line for a new wildcat test. In the northeastern part of the county, west of Rice, and extending into Ellis County, C. F. Tucker reportedly has leased 4,485 acres for 5 years and agreed to start a wildcat within 120 days from September 1. The acreage is in the John Smith, J. Blevins and John Wood surveys.

A spread of leases in northeastern Houston County, 14 miles northeast of Crockett, has been taken by H. H. Winert. The leases amount to approximately 1,825 acres and were taken from H. D. Mulder. Phillips Petroleum Co. has leased 432 acres in the northeastern part of Trinity County in an area 14 miles north of Groveton. Leases taken were in the B.B.B.&C., James Lee, G. W. Wilson and Trinity C.S.L. surveys. In the same sector, Dan C. Shay leased 107 acres in the P. Conley Survey and 81 acres in the M. L. Storey Survey.

In Leon County, J. K. Hughes has taken acreage in two separate areas. Two miles northeast of Centerville, where H. L. Hunt last week drilled a wildcat failure, Hughes leased 40 acres in the J. Croft Survey and in the Jewett area he took 78 acres in the J. W. Dodson Survey. A total of 159 acres have been taken by H. F. Heflin in the Ben Hur area of Limestone County. Heflin is reported to have assigned the leases to Robertson and Gillam.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: East Texas field	1	8	3,492
Chapel Hill	3	772	25,179
Hawkins	11	3,085	54,765
Long Lake	2	156	10,715
Other fields	2	308	9,468
Gas wells: Chapel Hill	1	*240	8,280
Dry holes: Wildcats	3	.....	13,376
Total	23	.....	125,275

*Million cu. ft.

Natural-Gas Line Planned for New Henderson County Field

A natural-gas pipe line for a new deep Athens field, recently opened by British American Oil Producing Co. 1 Young, is reportedly being contemplated by the Lone Star Gas Co. None of the plans are yet definite but will probably call for a line northward to tie in with the firm's Opelika-Trinidad carrier.

At the present time, the oil produced by the discovery well, which has a daily allowable of 135 bbl., is being taken by Stanolind and trucked to the Cayuga field. If future development in the area results in additional production, an oil-line outlet, as well as a gas-line outlet, will probably be constructed. No tests are now under way in the area, but plans are being made and it is likely that one or more locations will be announced before the first of the year.

Rusk County Wildcat to Be Deepened

Materials were being moved in during the week for the deepening of E. H. Hamilton and C. C. Thrasher 1 Kangerga Brothers, Ignacio Castro Survey, north of Chalk Hill in Rusk County, which was plugged in August 1940 at a total depth of 3,093 ft. The wildcat logged the Pecan Gap from 2,102-2,630 ft., topped the Austin chalk at 3,024 ft. and was abandoned in the chalk without testing the Woodbine sand. Elevation is 390 ft. Hamilton has reassembled the 1,500-acre block for the new attempt. No. 1 Kangerga Brothers will be drilled to the Paluxy sand, expected around 4,500 ft.

Wildcat Staked in Red River County

Rig was being moved in at the end of the week and operator was scheduled to spud within the next few days at Red River Co. 1 Stewart Stanley, W. P. Snell Survey, 11 miles north of Clarksville in Red River County. The wildcat is located on a block assembled by Albert Wooley and will be drilled to 2,500 ft.

No. 1 Stanley is 2 miles northwest of Dan Cleary 1 Mowery, Bowerman Survey, a failure which found a slight show of oil in the Paluxy sand. It is also about 2½ miles west of Harrison 1 Southern Pine, D. P. Burton Survey, which found a good show of oil in the Travis Peak but was never able to develop production on a commercial basis.

EASTERN TEXAS COMPLETIONS

Wildcats

Falls County: T. M. Smart 1 Susan Gill, 5 miles N Gurley, 200 ft. out of W cor. of G. Bosquez Sur., 179-ac. tract, dry at 1,335 ft., top Austin 605 ft.

Leon County: Hunt Oil Co. 1 D. A. Sullivan, F. Ramirez Sur., dry at 6,729 ft.

Wood County: R. W. Fain 1 W. T. Boozer, 3 mi. N of Mineola, Daniel Fuller Sur., dry at 5,312 ft.

East Texas Field

(1-hr. gage)

Longview, Gregg County: Tide Water 51 Lake Davernia, W. G. Painter Sur., 8 bbl., 2⅝-in. tubing, top Austin 3,483 ft., pay 3,484-92 ft.

Other Field Completions

Cayuga, Anderson County: Tide Water and Seaboard 6 M. H. Sullenberger, William Snider Sur., 190 bbl. in 24 hr., ⅛-in. choke, top Austin 3,241 ft., Woodbine 3,780 ft., pay 4,040-42 ft., T.D. 4,045 ft.

Chapel Hill, Smith County: Chapel Hill Gas System 1 Sallie Walton, J. D. Parchman Sur., 240,000,000 cu. ft. gas and 254 bbl. oil in 24 hr., ⅛-in. choke, gas pay 5,779-5,835 ft., oil pay 8,070-8,260 ft., T.D. 8,280 ft.

Sinclair 1 J. S. Carrithers, R. H. Andrews Sur., 336 bbl. in 24 hr., ⅞-in. choke, pay 8,284-8,312 ft., T.D. 8,364 ft.

Sinclair 1 L. A. Butler, P. Lively Sur., 277 bbl. in 24 hr., ⅞-in. choke, pay 8,275-92 ft., T.D. 8,397 ft.

Sun 1 J. L. Rayford, James Holden Sur., 159 bbl. in 24 hr., ¼-in. choke, pay 8,322-40 ft., T.D. 8,418 ft.

East Long Lake, Anderson County: Tex Harvey 1 M. R. Collier, E. Ewing Sur., 118 bbl. in 24 hr., 7/64-in. choke, pay 5,401-23 ft.

Hawkins, Wood County: Humble 4-D B. F. Allen, G. Brewer Sur., 319 bbl. in 18 hr., ¼-in. choke, top Austin 4,206 ft., top Woodbine 4,480 ft., pay 4,594-4,629 ft., T.D. 4,836 ft.

Humble 3 G. W. Atkins, J. P. Moseley Sur., 203 bbl. in 18 hr., ¼-in. choke, top Austin 4,314 ft., top Woodbine 4,596 ft., pay 4,761-4,835 ft., T.D. 4,884 ft.

Humble 1-C L. A. Bryan, M. A. Esparcia Sur., 102 bbl. in 6 hr., ¼-in. choke, top Woodbine 4,578 ft., pay 4,713-4,895 ft.

Humble 2 B. Harrgett, G. Brewer Sur., 95 bbl. in 6 hr., ¼-in. choke, top Austin 4,078 ft., top Woodbine 4,235 ft., pay 4,475-4,550 ft., T.D. 4,843 ft.

Humble 2 W. T. Minchew, J. B. Crain Sur., 340 bbl. in 24 hr., ¼-in. choke, top Austin 4,298 ft., top Woodbine 4,603 ft., pay 4,725-4,800 ft., T.D. 4,867 ft.

Humble 3 J. H. Smith, G. Brewer Sur., 75 bbl. in 6 hr., ¼-in. choke, top Austin 4,080 ft., pay 4,732-4,825 ft.

R. Lacy and S. Price 3 G. Maberry, S. Castleberry Sur., 112 bbl. in 8 hr., ¼-in. choke, top Austin 4,334 ft., top Woodbine 4,554 ft., pay 4,630-4,840 ft., T.D. 6,538 ft.

C. L. McMahon, Inc. 3 E. Pouncey, S. Castleberry Sur., 92 bbl. in 6 hr., ¼-in. choke, top Austin 4,370 ft., top Woodbine 4,602 ft., pay 4,680-4,700 ft., T.D. 4,785 ft.

Loyce Phillips 2 Mary Snider, J. P. Moseley Sur., 84 bbl. in 8 hr., ¼-in. choke, top Austin 4,413 ft., pay 4,822-45 ft.

Texas 1 R. F. Green, J. P. Moseley Sur., 95 bbl. in 6 hr., ¼-in. choke, top Austin 4,210 ft., top Woodbine 4,288 ft., pay 4,288-4,568 ft., T.D. 4,596 ft.

Texas 1 A. D. Snider, J. P. Moseley Sur., 123 bbl. in 8 hr., ¼-in. choke, top Austin 4,305 ft., top Woodbine 4,517 ft., pay 4,582-4,742 ft., T.D. 4,851 ft.

Long Lake, Anderson County: Carter and Gragg 2-A J. E. McGaughery, S. Sanches Sur., 81 bbl. in 24 hr., 6/64-in. choke, pay 5,311-17 ft.

Hunt Oil Co. 8 Broyles & Woolverts, E. Ewing Sur., 75 bbl. in 24 hr., 7/64-in. choke, pay 5,383-98 ft.

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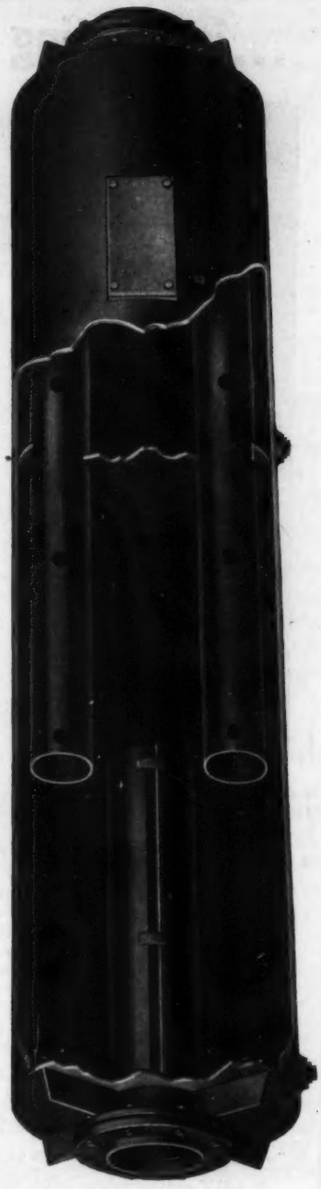

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(Continued from Page 74)

Texas 18-E Mallett, elev. 3,602 ft., 1,052 bbl., 14,000 gal. acid 4,995-5,040 ft.

Texas 54 Slaughter, elev. 3,568 ft., 2,336 bbl., 14,000 gal. acid 4,990-5,040 ft.

Texas 60 Slaughter, elev. 3,524 ft., 1,380 bbl., 12,000 gal. acid 4,935-5,000 ft.

Texas 61 Slaughter, elev. 3,537 ft., 1,587 bbl. oil and 2 per cent water, 13,000 gal. acid 4,860-5,017 ft

Texas 63 Slaughter, elev. 3,573 ft., 1,350 bbl., 13,000 gal. acid 4,950-5,010 ft.

Slaughter, Terry County: Gulf 11 Mallett, elev. 3,519 ft., 952 bbl., 12,000 gal. acid 5,005-30 ft.

Snyder, Howard County: F. H. E. Oil Co. 2-B D. H. Snyder, elev. 2,352 ft., 145 bbl. oil and 3 per cent water, pumping, 775-qt. shot 2,640-2,940 ft., T.D. 2,954 ft.

Wasson, Yoakum County: American Liberty 7 Randall, elev. 3,662 ft., 397 bbl., ⅝-in. choke, 10,000 gal. acid 5,000-5,232 ft.

Humble 14 Randall, elev. 3,637 ft., 442 bbl., ½-in choke, 6,000 gal. acid 4,995-5,100 ft., T.D. 5,119 ft.

TEXAS PANHANDLE

AMARILLO, Tex., Dec. 8.—The Panhandle district had 18 tests completed during the past week, 13 for oil wells and 5 gas wells, with no dry holes. The daily potential of the 13 oil completions amounted to 2,796 bbl., and the five gassers have a total daily yield of 320,000,000 cu. ft. Moore County last week had one of the largest gas wells ever completed in the Panhandle. It tested 260,000,000 cu. ft. by the back-pressure method, which is commonly used by the Railroad Commission; however, in actual flow volume the test would be considerably lower.

TEXAS PANHANDLE COMPLETIONS

Carson County: Holmes 11 Quinn, Sec. 7, Blk. 9, I.&G.N. Sur., 373 bbl., pumping, 220-qt. shot 3,026-87 ft., T.D. 3,120 ft.

Gray County: Phillips 3 Davidson, Sec. 86, Blk. B-2, H.&G.N. Sur., 366 bbl., pumping, 360-qt. shot 2,972-3,058 ft., T.D. 3,078 ft.

Phillips 4 Swanson, Sec. 87, Blk. B-2, H.&G.N. Sur., 277 bbl., pumping, 320-qt. shot 2,992-3,090 ft., T.D. 3,094 ft.

Skelly 5 Lovett, Sec. 36, Blk. B-2, H.&G.N. Sur., 91 bbl., pumping, 428-qt. shot 2,905-82 ft.

Skelly 140 Schaffer, Sec. 190, Blk. 3, I.&G.N. Sur., 271 bbl., pumping, 280-qt. shot 3,225-75 ft.

Hutchinson County: Danube Oil Corp. 6 Sanford, Sec. 78, Blk. 46, H.&T.C. Sur., 175 bbl., pumping, 1,500 gal. acid 2,700-14 ft.

Pennowa Oil Co. 3 Perkins, McDaniels Sur., 390 bbl., pumping, 410-qt. shot 2,960-3,064 ft., T.D. 3,068 ft.

Phillips 17 Jordan, Sec. 20, Blk. M-21, T.C. Sur., 71 bbl., pumping, 500-qt. shot 2,880-2,977 ft., T.D. 2,993 ft.

Phillips 8 Lizzie, Sec. 25, Blk. M-23, T.C. Sur., 362 bbl., pumping, 480-qt. shot 3,165-3,242 ft., T.D 3,244 ft.

Power Petroleum Co. 12 Haile, Sec. 29, Blk. V, Bralley Sur., 18 bbl., pumping, 360-qt. shot 2,967 3,017 ft.

Shell 37 Harvey, Sec. 14, Blk. M-21, T.C. Sur., 393 bbl., pumping, 120-qt. shot 3,020-3,105 ft.

Moore County: Kerlyn Oil Co. 2-C McDowell, Sec. 15, Blk. M-16, A.B.&M. Sur., 8,900,000 cu. ft. gas, 1,000 gal. acid 2,970-3,077 ft., T.D. 3,295 ft.

Phillips 1 Melvin, Sec. 311, Blk. 44, H.&T.C. Sur., 29,000,000 cu. ft. gas, 5,000 gal. acid 2,942-3,220 ft., T.D. 3,355 ft.

Shamrock Oil & Gas Corp. 1 Tays, Sec. 396, Blk. 44, H.&T.C. Sur., 260,000,000 cu. ft. gas, pay 2,932-3,227 ft.

Texhoma Natural Gas Co. 9-M Coon-Sneed, Sec. 7, Blk. 6-T, T.&N.O. Sur., 10,800,000 cu. ft. gas, pay 2,660-3,050 ft., T.D. 3,058 ft.

Texhoma Natural Gas 26-P Sneed, Ragsdale Sur., 12,400,000 cu. ft. gas, pay 2,390-2,800 ft.

Wheeler County: Smith Bros. 22 Johnson, Sec. 34, Blk. 24, H.&G.N. Sur., 17 bbl., pay 2,410-57 ft., T.D. 2,515 ft.

Pace & Ward 2 Patterson, Sec. 89, Blk. 13, H.&G.N. Sur., 192 bbl., pay 2,095-2,101 ft.

SOUTHEAST NEW MEXICO

HOBBS, N. M., Dec. 8.—Southeast New Mexico developments Saturday centered on a new sand discovery well in East Eddy County, Nay Hightower 1 Grier, as it was completed for large natural production. On a 24-hour test through ¾-in. choke on 2-in. tubing, the well flowed 390 bbl. of 37.4-gravity oil. The test is located in NW NW 31-16s-31e, 2¾ miles of the Grayburg pool. The strike logged pay sands from 3,062-72 ft. and from 3,108-18 ft., total depth.

A west offset to the discovery, Van S. Welch 1 State, is preparing to start. It is in NE NE 36-16s-30e.

SOUTHEAST NEW MEXICO COMPLETIONS

Wildcat, Eddy County: Nay Hightower 1 Grier, NW NW 31-16s-31e, flowed 390 bbl. of 37.4°-gravity oil through ¾-in. choke, pay 3,062-72 ft., 3,108-18 ft., T.D. 3,118 ft. *Pool opener.*

Maljamar, Eddy County: Emperor Oil 4-B Puckett, 25-17s-31e, flowed 32 bbl., 150-qt. shot 3,780-3,850 ft., pay 3,823 ft., T.D. 4,110 ft., P.B. 3,844 ft. Southwest extension.

Maljamar, Lea County: V. W. Shaw 1-B Pearsall, 4-18s-32e, flowed 105 bbl., lime pay 3,742 ft., 150-qt. shot 3,725-99 ft., T.D. 3,799 ft.

Wildcat Staked Ten Miles North of Catahoula Strike

By R. MARNE SANFORD

SHREVEPORT, La., Dec. 8.—The exploratory work in the central Louisiana Wilcox area is at an all-time high mark with one new discovery officially gaged, two prospective strikes still in the testing stages, and a total of 16 wildcat tests active in only three parishes.

The official wildcat completion for the week was the discovery well for the new Willow Lake field in Catahoula Parish, the second only for the parish. Discovery well was Roy L. Fisher and Phillips Petroleum 1 Womack-Cotton, NW NE 12-6n-6e, about 11 miles northeast of the parish's only other oil field, Larto Lake, and some 12 miles east of the Cypress Bayou field in La Salle Parish.

The well gaged 175 bbl. of oil daily, with no water, through perforations from 5,533-37 ft., total depth being 6,810 ft. The gage was through 3/32-in. choke with tubing and casing pressures at 625 lb. and 840 lb., respectively. It topped the Vicksburg at 1,397 ft., Moody 1,668 ft., Cockfield 1,891 ft., Cook Mountain 2,390 ft., Sparta 2,666 ft., Cane River 3,406 ft., Wilcox 3,757 ft., Midway 6,796 ft., and oil sand from 5,533-41 ft., with water at 5,544 ft.

For immediate development in this new field, the same operators have staked their 2 Womack-Cotton, NE NW 12-6n-6e, a west offset.

Second Wildcat Started in Catahoula Lake Area

The prospective oil discovery from the Wilcox zone in Rapides Parish of some 3 weeks ago, M. A. Marr 1 Eota Realty Co., SW NE 14-4n-3e, is still in the testing stages. It is some 18 miles southwest of the Larto Lake field of Catahoula Parish. Early tests had revealed 20 per cent of the fluid output from 5,771-90 ft. to be live, green oil; however, excessive water prompted another production attempt. New casing perforations from 5,149-54 ft. revealed only 5 per cent oil on tests, so these have been squeezed off and another attempt is pending. A discovery here would mark the farthest south extension of Wilcox production in the current play.

Tensas Parish Wildcat Recovers Wilcox Oil

Extending production possibilities from the Wilcox zone over into Tensas Parish, a wildcat the past week was coring deeper into the section after recovering an oil show. It was Carter Oil 1 Grace M. Rhodes, NW Section 29-9n-10e. On a drill-stem test from 3,360-3,406 ft. with ¼-in. top and bottom chokes open for 13 minutes, the well recovered 3 stands of mud and 1 stand of oil-cut mud. It is coring below 3,980 ft. The Wilcox had been topped at 3,394 ft. with oil sand from that depth to 3,399 ft.

Shreveport Test Nears Crucial Depth

The deep lower Marine exploratory test in the Shreveport field just outside the city of Shreveport is nearing the final stages and is showing much encouragement. It is Allison Drilling Co. 11 Ellerbe, NW SE Section 27-18n-14w, and early in the week cores from 8,464-66 ft. showed hard, dense sand with odors of oil. It is checking some 97 ft. higher than another deep test nearby. At last reports the test was coring below 8,467 ft. after topping the anhydrite at 3,656 ft., massive anhydrite at 4,334 ft., Pettit 5,545 ft., Travis Peak 5,815 ft., and Cotton Valley at 8,065 ft.

Wilcox Area Wildcats Are Numerous

Wildcatting to the Wilcox level in central Louisiana took another surge forward the past week with the staking of six new wildcats, five of them in La Salle Parish and the other in Catahoula Parish in the Willow Lake field (see above). The new exploratory tests are as follows:

La Salle Parish: Placid Oil 15-F Goodpine, SW SE 15-8n-4e.
Placid Oil 16-F Goodpine, NW SW 11-8n-2e.
Placid Oil 17-F Goodpine, NE SE 2-8n-3e.
Pacid Oil 1 C. F. Coon, W½ NW 39-7n-4e (irregular). Atlantic Ref. 1 Catahoula, C NW 27-7n-4e.
Catahoula Parish: Phillips 2 Womack-Cotton, NE NW 12-6n-6e.

The Catahoula Parish wildcat is the second test for the recently opened Willow Lake field and is located as a direct west offset to the discovery and in the same section.

SUMMARY OF COMPLETIONS

North Louisiana

	No.	Bbl.	Footage
Oil wells: Wildcats	1	175	6,810
Caddo	4	496	7,232
Little Creek	1	145	3,184
Nebo	5	656	15,519
Dry holes: Wildcats	1	.....	6,321
Nebo	2	.....	9,343
Olla	1	.....	2,740
Total	15	.....	51,150

Arkansas

	No.	Bbl.	Footage
Oil wells: Mount Holly	1	45	1,620
Gas wells: Macedonia	1	*3.8	8,955
McKamie	1	*2.3	9,336
Urbana	1	*20	3,569
Total	4	.....	23,480

East Texas Border

	No.	Bbl.	Footage
Oil wells: Pine Island	1	100	1,705

*Million cu. ft.

NORTH LOUISIANA COMPLETIONS

Wildcats

Willow Lake, Catahoula Parish: Roy L Fisher 1 Womack-Cotton, discovery well, NW NE 12-6n-6e, flowed 175 bbl. daily, perf. casing 5,533-37 ft., T.D. 6,810 ft., top Vicksburg 1,397 ft., Moody branch 1,668 ft., Cockfield 1,891 ft., Cook Mountain 2,390 ft., Sparta 2,666 ft., Cane River 3,406 ft., Wilcox 3,757 ft., Midway 6,796 ft., water 5,544 ft.

Rapides Parish: Placid Oil 1 Bentley Lumber Co., NE SW 11-4n-5w, dry at 6,321 ft. in Wilcox zone.

Fields

Caddo, Caddo Parish: Gary & Gibson 5 Muslow, SE NW 6-20n-15w, 35 bbl., 1,507 ft.
A. P. Gilbert 1 Gray, SW NE NW SE 34-22n-16w, 180 bbl. oil and 20 bbl. water, 2,460 ft.
Stanolind 144 Dillon, NE SW 13-21n-15w, 128 bbl. oil and 17 bbl. water, 1,634 ft.
Stanolind 145 Dillon, NE SW 13-21n-15w, 153 bbl. oil and 119 bbl. water, 1,631 ft.

Little Creek, La Salle Parish: H. L. Hunt 8 Hannehill & Gallagher, SW NE 31-9n-2e, 145 bbl. oil and 20 bbl. water, 2,494-96 ft., 3,184 ft., T.D.

Nebo, La Salle Parish: Berkshire Oil 1 Yule Community, irregular Sec. 40-7n-3e, 129 bbl. oil, perf. casing 3,704-10 ft., 4,100 ft., T.D.
H. L. Hunt 1 Gaharan, irregular Sec. 39-7n-3e, 135 bbl., 10 bbl. water, 3,664-67 ft., 4,062 ft., T.D.
H. L. Hunt 36-A Goodpine, NW SW 15-7n-3e, dry at 4,281 ft.
H. L. Hunt 6-C Goodpine, NW SE 29-8n-3e, dry at 5,062 ft.
Horace L. Hunt, Jr., 1 Goodpine, SE NW irregular Sec. 38-7n-3e, 124 bbl. oil and 19 bbl. water, perf. casing 3,923-26 ft., 3,928-30 ft., 3,940-43 ft.
Placid Oil 4 Couch unit, SE NE 29-8n-3e, 133 bbl. oil and 8 bbl. water, 3,375-80 ft., T.D.
Placid Oil 3 J. N. Gray, irregular Sec. 38-7n-3e, 135 bbl. oil and 15 bbl. water, perf. casing 3,904-24 ft., 4,034 ft., T.D.

Olla, La Salle Parish: Placid Oil 117 Louisiana Central, SE SE 6-10n-3e, dry at 2,740 ft.

Travis Peak Discovery Well Completed at Smart Field

The Smart field in Ouachita County is due considerable drilling as a result of favorable results in a new discovery from a deeper horizon in the area. The test is Bourgeois & Stratton 1 Westley, SW SW Section 7-15-19, about 1 mile east of the main part of the Smart field. Production has now been established from the deeper Travis Peak section, the first such production for the county. Casing was perforated from 3,489-94 ft. and the well was swabbed in making an ungaged amount of oil and no salt water. The hole is bottomed at 3,627 ft.

Indicating immediate development for the area, Stratton has two additional locations to be drilled on the same discovery 40-acre tract, whole other wells are planned for the immediate vicinity by M. L. Turner and associates. Lease and royalty trading has been active in the area for several weeks and is still gaining momentum.

New Wildcats for Union County

During the past week there were two new wildcats staked in the Arkansas area, both being in Union County. Contract depths were not divulged for either test. They were:

Union County: Marine Oil 1 Newsom, SE NE SE 19-17s-13w.
R. Ferguson 1 Bull, NW NE SW 20-17s-13w.

ARKANSAS COMPLETIONS

Fields

Macedonia, Columbia County: Atlantic Ref. 1 Souter-Whitlow, 100 ft. E of C N½ NW 16-18s-21w, 3,850,000 cu. ft. gas and 350 bbl. distillate daily, perf. casing 8,833-48 ft., T.D. 8,955 ft.

McKamie, Lafayette County: Carter Oil 1-B Hanes, 30-17s-23w, 2,284,000 cu. ft. gas and 312 bbl. distill-

(Continued on Page 93)

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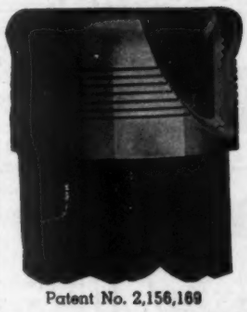

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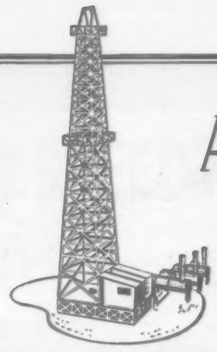


Among the Drilling

Association Announces Full Slate Of Officers and Directors

THE FULL SLATE of officers for 1942 has been announced by the American Association of Oilwell Drilling Contractors, which held its first annual meeting last month.

J. E. Brantly, Drilling & Exploration Co., Inc., was reelected president. Other officers are: W. D. McBee, Dallas, Tex., assistant to the president; Harry L. Edwards, Houston, Tex., vice president at large; Ben M. McGraw, Crossville, Ill., vice president for cable tools; C. J. Paine, Dallas, treasurer; and Brad Mills, Dallas, executive secretary.

Directors carrying over whose terms expire in 1942 are: Walter Buaas, Bakersfield, Calif., Pacific Coast; C. J. Davidson, Fort Worth, Tex., Permian basin; J. J. Moran, Wichita Falls, Tex., North Central Texas; A. S. Ritchie, Wichita, Kans., central Mid-Continent; J. I. Roberts, Shreveport, La., Cretaceous and Tertiary basins; E. B. Rubsamen, San Antonio, Tex., Gulf Coast region; Walter G. Tschudin, Mount Vernon, Ill., North Central Paleozoic basin, and Wallace E. Haupt, Greensburg, Pa., Appalachian region.

New directors who will serve until 1943: Thomas P. Pike, Los Angeles, Calif., Pacific Coast; George Cree, Pampa, Tex., and Ed Warren, Midland, Tex., West Texas Permian basin; Frank Wood, Wichita Falls, Tex., North Central Texas; Glenn Campbell and Frank Stickle, Tulsa, central Mid-Continent basin; N. H. Wheless, Shreveport, La., Cretaceous and Tertiary basins; Cecil N. Housh, Houston, and Horace Fitzpatrick, Corpus Christi, Tex., Gulf Coast region; Harvey H. Sims, Salem, Ill., and Ben McGraw, Crossville, Ill., North Central Paleozoic basin; Don Martin, Denver, Colo., Rocky Mountain region; and John J. Klise, Wooster, Ohio, Appalachian region.

Directors at large are: Will I. Lewis, Mount Vernon, Ill.; Glenn H. McCarthy, Houston, Tex.; Leslie Fain, Oklahoma City, Okla.; Grady H. Vaughn and M. J. Delaney, Dallas, Tex.; Al A. Buchanan, San Antonio, Tex.; Mr. Brantly; George Livermore, Lubbock, Tex.; C. J. Paine, Dallas; George F. McQueen, Fort Worth, Tex.; Harry L. Edwards, Houston; A. R. Dillard, Wichita Falls; Warren S. Churchill and George H. Lang, Tulsa; Howard P. Holmes, Dallas; Lon Cron, Houston; Joseph Zeppa, Tyler, Tex.; A. T. McDannald, Houston; Cyrus Bell, Los Angeles, and Louis Franklin, Houston.

The executive committee consists of Messrs. Brantly, Edwards, Paine, Churchill, McGraw, Buchanan, Davidson and Ritchie.

O. W. DYER, Houston, Tex., opened a new field for the Texas Gulf Coast district with the completion of Atlantic 1 Foster Lumber Co., a wildcat located in the Fostoria area, Montgomery County. The well was drilled to a total depth of 11,794 ft., and production was established in the Cockfield sand at 5,700 ft.

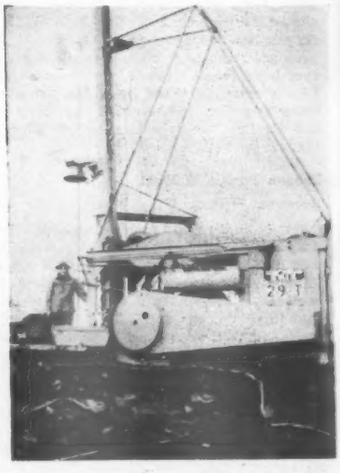
WYNN CROSBY Drilling Co., of Houston, Tex., opened Wilcox sand production in the Lissie area, Wharton County, Texas, as the company's 1 Poole flowed gas and distillate when tested through perforated casing at intervals from 9,590 ft.

GLENN H. McCARTHY, Houston, Tex., has started drilling operations on a second well in the new Magnolia Creek field, Montgomery County, Texas, while in the Bailey Prairie area, Brazoria County, Texas, a rotary is being moved in for another deep test. In the meantime, drilling continues below 9,400 ft. in the contractors's 1 Crawford, a wildcat located in the H. Parker Survey, Jefferson County, Texas, which is credited with having logged sand showing oil and gas.

DIRKS BROTHERS, Beeville, Tex., has logged encouraging showings in its 1 R. Harris, located in the West Tuleta field, Bee County, Texas, and casing is expected to be cemented in the near future for a production test of sand at 7,488-7,516 ft. which was logged as a gas-distillate sand in the Carrizo formation.

ALLEN & MORRIS, San Antonio, Tex., are moving a rotary to Nueces County, Texas, for a wildcat to be drilled for George Greer, located on the A. H. Theis lease in the Bishop subdivision of the Petronilla ranch. Seven other active operations are reported throughout the Southwest Texas district.

TEX HARVEY, drilling contractor, was given contract by E. B. Germany of Dallas, Tex., and is expected to



This crew of cable-tool workers is now engaged in drilling blast holes on an Army project in Alaska. Crewmen, left to right, are: S. B. Rodgers, Kilgore, Tex.; J. M. Evans, Chanute, Kans.; Loyd Sligh, Breckenridge, Tex.; Alford Jlonta, Rodessa, La., and H. H. Mullies, Eureka, Kans. The drilling machine used in shot-hole drilling is shown above

Contractors

move in shortly for a Woodbine sand test located northeast of Emory in Rains County, Texas.

C. B. MORRIS and L. O. HILL, of Pittsburg, Tex., have the contract to drill 1 Stewart Stanley, a wildcat project in Red River County, Texas. The test is located in the W. P. Snell Survey, 11 miles north of Clarksville. The wildcat is planned as a 2,500-ft. operation.

JIM COLLINS, Saginaw, Mich., has contracted to drill Devonian Petroleum Co. 1 Workman, NE NE SW Section 35-14n-3w, Isabella County, Michigan.

DAN RAYBURN, Grand Rapids, Mich., contractor, has assigned a string of tools to location for 1 Bert Sivier, SE NW NW Section 36-19n-3e, Arenac County, Michigan.

DEAN FURSE, Houston, Tex., drilling contractor, is erecting a 122-ft. steel derrick preparatory to drilling a rotary test to 5,000 ft. for J. H. Sealey et al on land lot 116, land district 2, in Daugherty County, Georgia. Location is 6 miles south and slightly west of Albany, Ga.

CRYDEN Petroleum Co., Saginaw, Mich., has contracted to drill Charles W. Teater 1 George Cosgrove, C W½ SW NW Section 14-14n-12e, Sanilac County, Michigan.

C. C. RICHARDS, Tyler, Tex., drilling contractor, has the contract for a wildcat test in Nacogdoches County, Texas, which is contracted to the lower Wilcox at 6,500 ft. The test is the 1 R. W. Wilson, of B. K. D. Oil Co., in the Y'Barbo Survey, approximately 2 miles north and east of the Chireno Township.

BELMONT QUADRANGLE Drilling Corp has completed the biggest gas well to be brought in in the New York-Pennsylvania field in many months. Located on the George Lewis farm in West Union Township, Steuben County, New York, the well flowed approximately 16 million cubic feet of gas daily.

J. C. ARTHURS, INC., Grand Rapids, Mich., has taken contract to drill Freeman Oil Co. A-5 State, C N½ SW SW Section 34-21n-3w. The contractor also has taken the job of drilling Freeman Oil Co. 1 Sheral Callahan, C S½ SW SE Section 25-18n-5w, Clare County, Michigan.

MUSKEGON Development Co., Muskegon, Mich., has been awarded contract for Regal Dutch Petroleum Co. 1 Wamhoff, SW NW NE Section 18-3n-12w, Allegan County, Michigan.

RHODES Drilling Co. of Abilene, Tex., will drill 1 R. H. Seale, a new Callahan County, Texas, wildcat test. The footage of 1 R. H. Seale is 330 ft. from the north and east lines of a 40-acre tract in Lewis Johnson Survey.

TWIN Drilling Co., Tulsa, has received contract for two wells for Taggart Brothers Co. of Grand Rapids, Mich., in Osceola County. Both are inside locations, one in Section 8-18n-3w and the other in Section 16-18n-3w.

PARKER Drilling Co. has moved a rotary rig to Albion, Mich., from the 1 Gulf-Bateson in Bay County, Michigan, the state's record-depth well, and will spud Thursday on Continental Oil Co. 1 Turner, NE SE NE Section 15-3s-4w, Calhoun County, Michigan, wildcat. It is uncertain whether the test will be carried to its projected depth with rotary or standardized at 1,800 ft. The test is scheduled for about 5,000 ft., or deep enough to reach St. Peter sand.

FALCON-SEABOARD Drilling Co., Tulsa, soon will move rig to a location in North County, Kansas, SE NW Section 25-16s-5w, on acreage obtained on a farmout agreement from Continental Oil Co.

LUPHER Drilling Co. has purchased a new rotary rig, which is scheduled for delivery this month. The company is now running six rotary rigs in Michigan.

S. H. QUINN, drilling contractor, has the contract to drill a Coleman County, Texas, wildcat for Gladys Huffman, San Angelo oil operator. The test will be known as the 1 Dr. Bailey, and is located 1,650 ft. from the north and 2,310 ft. from the west lines of Section 17, H.&T.B. Ry. Co. Survey, 1¼ miles northeast of Camp Colorado and 3½ miles southwest of Echo. The test is contracted to drill 3,200 ft., or to the Ellenburger.

USCAN Drilling Co., Oklahoma City, Okla., has moved a rig in the Slaughter field, Hockley County, Texas, to location for 4 Booher, Kaufman County School Lands.

AMERICAN Drilling Co., Hobbs, N. M., is in final stages of completing its contract for drilling Anderson-Prichard Oil Corp. et al 1 Ellwood, a wildcat test in Hockley County, Texas, 8 miles northeast of Levelland.

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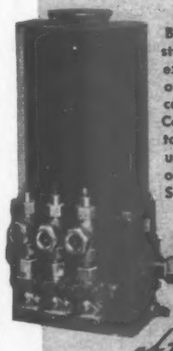

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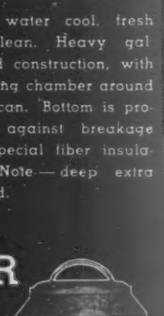

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Cockfield Sand Pays South Of Early Tests at Fostoria

By NEIL WILLIAMS

HOUSTON, Tex., Dec. 8.—The opening of Cockfield sand production in the Fostoria area, eastern Montgomery County, discovery of gas-distillate production from the Wilcox sand in the Lissie area, Wharton County, and a scheduled production test of a deep test on the north flank of the Big Hill dome, Jefferson County, marked up an interesting week of developments for the upper Texas Gulf Coast district the past week.

Cockfield sand production was being opened in the Fostoria area, Montgomery County, as Atlantic Refining Co. prepared for a final production test of 1 Foster Lumber Co. The well flowed at the rate of 10 bbl. of oil per hour on a 7-hour drill-stem test from perforated casing at 5,790-94 ft. Working pressure was 450 lb., and bottom-hole pressure was 1,950 lb.

After the testing tool was removed from the hole, 2,340 ft. of oil and 540 ft. of oil and salt water was recovered. At the close of the week the lower section of the perforations were being squeezed off to eliminate the salt water, and the well was scheduled to be tested the first of the week.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Fields	24	4,143	141,329
Dry holes: Fields	4	.....	20,111
Total	28	.....	161,440

The well is situated in the P. Gill Survey, just west of the town of Fostoria. It is the second Cockfield sand field to be opened within the past 2 weeks, being located approximately 22 miles southwest of the Goodrich field in Polk County. Completion in the Cockfield was made after a series of tests made in the Wilcox at 10,508-20 ft. and 9,090-9,136 ft. tested salt water, and a slight amount of gas. Fostoria has been looked upon as a favorable prospect for a number of years and several wildcats have been drilled in the general area, the majority being located to the north and northeast. Geological markers of the discovery well have not been released and it cannot be correlated with previous development.

In the Goodrich field, Polk County, Pan American 2-B Texas Long Leaf Lumber Co., 933 ft. northwest of the discovery well, cored oil sand at 4,037-45 ft., and a production test was made after a cement squeeze job was made to shut off the salt-water sand which was topped at 4,052 ft. Total depth is 4,080 ft., and 5½-in. casing was cemented at 4,078 ft. The Cockfield was topped at 3,974 ft., and production in the field is from the upper section.

Wilcox Gas-Distillate Pay Opened at Lissie

Gas-distillate production from the Wilcox sand was opened in the Lissie area, Wharton County, as Wynn Crosby 1 William Poole, A. Fry Survey, flowed 52 bbl. of 50-gravity distillate in 13 hours on a drill-stem test through perforated casing at 9,590-9,602 ft., and at 9,614-20 ft. This well was drilled to a total depth of 10,777 ft., and although the top of the Wilcox was not available, production is believed to be from the upper section. This is based on the structural position of the well in relation to Strake 1 Poole, a 10,116-ft. hole located about 3½ miles southwest which topped the section at approximately 9,700 ft.

The Strake well tested several showings in the Wilcox, but was finally completed in the Yegua sand as a small gas-distillate producer at 6,728-34 ft. The Crosby test apparently eliminates any chance of production in the lower section as gas-cut mud was recovered on two drill-stem tests at 10,620-56 ft. and at 10,638-46 ft.

In the same county, and located in the Danevang area, Seaboard 1 Baklik, a wildcat located in the W. L. Wilson Survey, has resumed drilling following a drill-stem test at 6,918-29 ft. which tested no working pressure, and recovered 90 ft. of distillate-cut mud. Sand with a gas odor was cored at 6,922-27 ft.

First Flank Production Likely at Big Hill

On the north flank of the Big Hill dome, Jefferson County, Stanolind Oil & Gas Co. was making preparations to test 1 George D. Anderson which may open the first commercial production for this old dome. Total depth of the well is 9,500 ft., and 350 ft. of 5-in. liner was set at 8,800 ft. preparatory to testing several showings of oil and gas logged by an electrical survey at intervals from 7,011 ft. to the total depth. This is the deepest test ever drilled around the flanks of the structure on which development has been limited to a large extent by a thick section of heaving shale. A small amount of oil has been produced from the Pliocene and Miocene sands at comparatively shallow depth, but this production was short lived.

Stowall Wildcat Drilling Ahead

In the same county, and located in the Stowall area, Glenn H. McCarthy 1 Crawford continues to attract attention as it drills below 9,380 ft. This well is being drilled extremely tight, and reports were circulated that the well flowed pipe-line oil on a drill-stem test in a sand section topped at 8,550 ft. It is known that three drill-stem tests were attempted at 8,550-85 ft., but all failed when the seat of the testing tool slipped. The well is situated in the H. Parker Survey 158, about 5 miles northeast of the Seabreeze field, and about the same distance southwest of the Fannett field.

Tyler County Test Gets Small Show

West of the Joe's Lake field, Tyler County, Republic Production Co. 1 Smith fee, is coring in sand below 7,822 ft., following two drill-stem tests that showed meager results. A 20-minute drill-stem test at 7,773-77 ft., tested 35 lb. working pressure and 790 ft. of drilling mud with a slight show of oil and gas, while another test at 7,777-82 ft., recovered 720 ft. of salt water.

Two Locations Made at North La Ward

The North La Ward field, Jackson County, gained two new operations as Harrison & Abercrombie and Cities Service Oil Co. announced locations for their first wells. Offsetting Gulfboard 1 Dickey in the extreme southwestern part of the field, Harrison & Abercrombie staked location for 1 Woodruff, north offset in Block 32, P. Scott Survey. Cities Service Oil Co. announced location for 1 J. A. Graves, a north offset to Christie & Dunnam 1 Pickering. In the meantime, Magnolia Petroleum Co. is moving in material for 7 and 8 Gordon, one of which is located about 1,000 ft. northwest of 3 Gordon, recently completed to extend the field 4,000 ft. northwest.

TEXAS GULF COAST COMPLETIONS

Fields

Blessing, Matagorda County: Texas 1 Braden, 155 bbl., ¼-in. choke, perf. casing 8,285-8,316 ft., T.D. 8,322 ft.

Fannett, Jefferson County: Gulf 13 Bordages, 184 bbl., ½-in. choke, perf. casing 8,454-61 ft., T.D. 8,462 ft.

Ganado, Jackson County: Texas 2 Mortgage Land & Investment Co., 178 bbl., ⅜-in. choke, perf. casing 6,448-55 ft., T.D. 6,460 ft.

Hull, Liberty County: Republic 155 Dolbear, 73 bbl., pumping, T.D. 2,611 ft.

Gulf 109 Phoenix Development Co., dry, T.D. 3,779 ft.

South Oil Co. 15-B Merchant, 168 bbl., ½-in. choke, T.D. 6,300 ft., P.B. T.D. 6,285 ft.

Houston Oil Co. 1-B Heimple, dry, T.D. 6,559 ft.

Lolita, Jackson County: Humble 22-A L. Ranch, 456 bbl., ¼-in. choke, sand 5,928-37 ft.

Magnolia 1 M. Lou, 132 bbl., ½-in. choke, perf. casing 5,941-44 ft., T.D. 5,945 ft.

Magnolia 16 I. N. Mitchell, 75 bbl., 5/64-in. choke, perf. casing 6,391-94 ft., T.D. 6,394 ft.

Lovells Lake, Jefferson County: Humble 23 Jefferson Land Co., 84 bbl., 7/64-in. choke, perf. casing 7,721-22 ft., T.D. 7,788 ft.

Magnet, Wharton County: Humble 41 Cockburn, 108 bbl., ½-in. choke, sand 5,536-38 ft.

Markham, Matagorda County: Hamill & Hamill 9-B Meyers, 104 bbl., ¼-in. choke, perf. casing 2,311-21 ft., T.D. 2,824 ft.

Maurbro, Jackson County: Humble 4 Mike Strauss, 288 bbl., ¼-in. choke, sand 5,220-33 ft.

North La Ward, Jackson County: E. M. Jones 1 Olsovsky, dry, T.D. 5,353 ft.

Magnolia 4 Gordon, 17 bbl., 9/64-in. choke, perf. casing 5,208-16 ft., T.D. 5,227 ft.

Oyster Bayou, Chambers County: Sun 6 Jackson, 692

(Continued on Page 96)

SOUTHWEST TEXAS

New Pay Found by Sun Field Outpost May Open New Area

By F. L. SINGLETON

CORPUS CHRISTI, Tex., Dec. 8.—A major extension or a new producing area, was assured the Sun field, Starr County, as Sun 1-C Montalvo, 1½ miles north of production recovered pipe-line oil in a new sand in the Frio-Vicksburg section. Sand showing oil was cored at 5,376-86 ft., and a 15-minute drill-stem test at 5,382-86 ft. recovered 1,950 ft. of oil, and showed 255 lb. working pressure.

The base of the section was believed to be 5,390 ft., and the well is coring ahead in shale below 5,618 ft., following another test at 5,599-5,610 ft. which recovered 92 ft. of oily mud and 552 ft. of salt water. This well may open an entirely new field for the county rather than extension to production as the sand is a new one for the district, being several hundred feet deeper than the main pay at 4,800-4,900 ft.

SUMMARY OF COMPLETIONS

Laredo District

	No.	Bbl.	Footage
Oil wells: Fields	9	164	32,920
Gas wells: Fields	1	.....	2,832
Dry holes: Fields	1	.....	5,007
Wildcats	6	.....	29,941
Total	17	.....	70,700

Lower Gulf Coast District

	No.	Bbl.	Footage
Oil wells: Fields	8	1,119	51,692
Gas wells: Fields	1	.....	5,526
Dry holes: Wildcats	1	.....	4,852
Total	10	.....	62,070

Several wells in the field proper have been drilled below 5,600 ft., but all have been plugged back and completed in upper sands. In addition to the 5,300-ft. sand, 1-C Montalvo has logged additional sands up the hole which showed gas or distillate on several drill-stem tests. Development along this particular sector of the trend has been highly successful during the year as two new fields have been opened and extensions to proven fields have been recorded.

Along this same trend, and just across the Jim Hogg County line, Sun Oil Co. was preparing to test 1 Jones, located in the Agua Nueve de Abajo grant. Total depth of the well is 6,009 ft., and 5½-in. casing was cemented at 4,284 ft. The test is expected to be made at intervals from 4,211-68 ft., where drill-stem testing 2 weeks ago showed indications of gas-distillate production.

Yegua Sand Discovery at Government Wells Gaged

Yegua sand production was officially opened 1 mile west of the Government Wells field, Duval County, as Sun 75 Wiederkehr, J. Poitevent Survey 55, was flowing at the rate of 3 bbl. per hour through a ¼-in. choke, while testing through perforated casing at 2,934-40 ft. Tubing pressure was 70 lb., and casing pressure 750 lb. This is the first Yegua sand production to be opened along this trend, and the discovery is expected to result in a revival of wildcatting along this particular trend.

Additional development on the north side of the Kohler field, Duval County, is anticipated as P. L. Keller 1 W. R. Peters, 1 mile north of production, was flowing gas while testing through perforated casing at 2,615-18 ft. The well was flowing through a ¼-in. choke with 450 lb. tubing pressure and 740 lb. casing pressure. Total depth of the well is 2,661 ft. with 5½-in. casing cemented at 2,653 ft.

Seven miles northeast of Bruni, Duval County, Henderson Coquat 1 Lopez, was showing promise of opening a new shallow field as it was reported to be showing considerable oil while tested through perforated casing at 1,698-1,703 ft. Casing was cemented the previous week after sand with an oil odor was cored at 1,693-1,704 ft. Location is in the J. Poitevent Survey 455. In the eastern half of the county along the Cockfield trend, Tom Graham is moving in material for 1 A. G. Villareal, a 6,500-ft. test, located about 7 miles south of the town of Benavides.

All indications point to an active wildcatting program throughout the Laredo district. This has been encouraged by the discovery of several fields, and recent development have marked some of them as important reserves. In Jim Hogg County, Adams, Neuhaus and Lucky will attempt to open oil production in the Chaparosa gas field, as material was being moved in for 1 Tom East, 1½ miles south of the field where the same operators have completed three gas wells. Location of the well is in Block 277 of the El Randado grant. Contract depth is 3,000 ft. Southeast of Mirando City, Webb County, O. W. Killam is starting a 3,500-ft. test on the Marrs McLean lease in Survey 610. Five miles north of Oilton, Wolcott and Rehmet are moving in material for a 2,000-ft. Mirando sand test located on the Sarah Lloyd lease in Block 13, C.C.S.D.& R.G.N.G. Survey 23.

Operators interested in Carrizo-Wilcox sand development centered their attention on Dirks Brothers 1 R. Harris located in the West Tuleta field, Bee County, which is drilling in shale below 7,600 ft. after logging gas-distillate sands in the Carrizo sand. An electrical survey showed sand at 7,488-98 ft., 7,500-08 ft., and from 7,511-16 ft., and side-wall cores in this section recovered shale and sand with a good distillate odor. Whether the well will be drilled to the Wilcox or casing cemented for testing in the above section was not announced. This is the first deep test to be drilled in the field since Carrizo production was opened several months ago by Miles Bennett Production Co.

Another Frio-Vicksburg sand test was being started in Jim Wells County as Anderson-Prichard Oil Corp. moved in material for 1 Lem L. Allen, a 5,500-ft. test, located 2 miles north of the Wade City field in Section 10, Block B, of the Bodie subdivision of the Wade ranch. Another wildcat is scheduled to be drilled in the near future by Wesly Davis on a Republic Natural Gas Co. farmout lease, 4 miles east of the Orange Grove townsite in Block 5 of the J. H. Gallagher subdivision in the Casa Blanca grant.

A third producing well was recorded for a new Petronilla field, Nueces County, with the completion of Stanolind 1 Gillette which is flowing at the daily rate of 178 bbl. through a ½-in. choke. Total depth of the well is 7,324 ft., and production is from the discovery pay in the basal Frio at 7,317 ft. The well extends production 934 ft. westward.

Nueces County continues to be the most active area in the district with approximately 35 operations reported in the county. Twenty of these are located along the Agua Dulce-Statton trend. Production of the two fields have been merged by recent developments which has pushed production into Kleberg and Jim Wells counties which adjoin the field proper on the south and west. Several wells located as outposts to production are nearing critical and whether established production will be extended or defined will be determined within the next several days.

Along the Balcones fault-line district, Wellington Oil Co. 1-B Sullivan, 10 miles northwest of Carrizo Springs, Dimmit County, has been completed as a gas well but no gage was available as the well was shut in as soon as it was completed. Shut-in tubing and casing pressure was 510 lb. The well was drilled to a total depth of 2,983 ft., and production is from sand at 1,087-90 ft. This is the second field to be opened in the county.

SOUTHWEST TEXAS COMPLETIONS

LOWER GULF COAST DISTRICT

Wildcats

San Patricio County: Argo Oil Corp. 1 Wright, dry, T.D. 4,852 ft.

Willacy County: Clark & Cowden 2 Yturria, dry, T.D. 8,505 ft.

Fields

Agua Dulce, Nueces County: R. H. Hawn 2-D Wofford, 70 bbl. oil, 5/64-in. choke, perf. casing 6,926-42 ft. and 7,038-50 ft., T.D. 7,060 ft.

Alice, Jim Wells County: Graham 2 Hirsch, 625,000 cu. ft. gas, ¼-in. choke, perf. casing 4,652-66 ft., T.D. 5,526 ft.

Fagan, Refugio County: P. R. Rutherford 6-C Fagan, 75 bbl., 3/32-in. choke, perf. casing 5,639-43 ft., T.D. 5,658 ft.

La Gloria, Jim Wells County: La Gloria Operators 1 Unit 17, 95,000,000 cu. ft. gas and 293 bbl. distillate, open flow, perf. casing 5,692-6,042 ft., T.D. 6,952 ft.

Odem, San Patricio County: Seaboard 2 Lane, 111 bbl., ⅛-in. choke, perf. casing 5,322-25 ft., T.D. 5,326 ft.

Richard King, Nueces County: Southern Minerals 23 King, 31 bbl. oil plus 93 per cent salt water, ¼-in. choke, perf. casing 4,014-17 ft., T.D. 5,625 ft.

Seeligson, Jim Wells County: Transwestern 7 Dunlap, 92 bbl., 5/64-in. choke, perf. casing 5,925-30 ft., T.D. 6,250 ft.

Willamar, Willacy County: Pan American 1 Hodge, 157 bbl., ¼-in. choke, perf. casing 7,834-42 ft., T.D. 7,861 ft.

Stratton, Nueces County: S. E. W. Oil Corp. et al 2 Rivers, 280 bbl. distillate, ¼-in. choke, perf. casing 6,716-6,832 ft., T.D. 6,960 ft.

LAREDO DISTRICT

Wildcats

Duval County: Humble 3-E Welder, dry, T.D. 4,300 ft.

Hidalgo County: La Gloria Corp. 1 Adams, dry, T.D. 8,051 ft.

Jim Hogg County: Achning & Daubert, dry, T.D. 2,975 ft.

Webb County: Forest Development 1 Hogterp, dry, T.D. 1,907 ft.

Magnolia 2 Tomas, dry, T.D. 4,203 ft.

Fields

Alta Mesa, Brooks County: Standard Oil Co. of Texas 20 Mestena Oil & Gas Co., 113 bbl., pumping, sand 2,480-97 ft., T.D. 2,515 ft.

Colorado, Jim Hogg County: Humble 43-B King, 465,000 cu. ft. gas, 5/32-in. choke, T.D. 2,832 ft.

Humble 45-B King, 198 bbl., ⅞-in. choke, T.D. 2,858 ft.

Kelsey, Brooks County: Magnolia 13 State, 118 bbl., 7/64-in. choke, perf. casing 4,948-50 ft., T.D. 4,976 ft.

Piedra De Lumbre, Duval County: Magnolia 31 Duval County Ranch Co., 75 bbl., jetting, ⅜-in. choke, T.D. 2,131 ft.

Rincon, Starr County: Continental 110-A Slick, 129 bbl., 20 hr., ⅞-in. choke, sand 4,156-68 ft., T.D. 4,305 ft.

Continental 112-A Slick, 162 bbl., ⅞-in. choke, sand 3,976-4,018 ft. and 4,152-56 ft., T.D. 4,195 ft.

Continental 114-B Slick, 131 bbl., ⅞-in. choke, sand 4,142-4,210 ft., T.D. 4,220 ft.

Continental 1-E Davenport, dry, T.D. 5,007 ft.

South Campana, McMullen County: Transwestern 1 McDowell, 96 bbl. fluid, 2 per cent salt water, 5/32-in. choke, perf. casing 3,070-74 ft., T.D. 3,100 ft.

Yturria, Starr County: Sun 1-A Chapotal, 142 bbl., 9/64-in. choke, perf. casing 4,247-50 ft., T.D. 4,620 ft.

North Louisiana—Arkansas

(Continued from Page 89)

ate daily, perf. casing 9,250-70 ft. and 9,286-9,306 ft., 9,336 ft., T.D.

Mount Holly, Ouachita County: Lee Bergman 3 Cook, NW NW SW 27-15s-18w, 45 bbl. oil and 700 bbl. water, 1,620 ft., T.D.

Stephens, Columbia County: G. H. Vaughn 1 R. B. Allen, SE NW NW 13-15s-20w, location abandoned.

Urbana, Union County: Roberts & Murphy 1 Parker, SE NE SE 3-18s-13w, 20,000,000 cu. ft. gas daily, perf. casing 3,169-78 ft., 3,569 ft., T.D.

AVERAGE DAILY PRODUCTION

NORTH LOUISIANA

	Dec. 6	Nov. 29
Caddo light	6,710	6,515
Caddo heavy	2,280	2,350
Cotton Valley	15,975	16,430
Cross Lake	2,710	2,640
De Soto and Red River	995	1,015
Haynesville	2,680	2,470
Homer	2,950	2,960
Lisbon	2,365	2,310
Little Creek	2,880	2,985
Nebo	5,275	6,165
Olla	14,025	14,050
Rodessa	12,985	13,125
Sligo	2,550	2,570
Sugar Creek	1,440	1,450
Urania	2,025	2,050
Zwolle	990	975
Total North Louisiana	81,485	81,575

SOUTH ARKANSAS

Atlanta	2,815	2,825
Buckner	2,425	2,405
Champagnolle	810	825
Dorcheat	1,925	1,900
El Dorado	1,350	1,360
Magnolia	18,910	18,950
Nick Springs	625	675
McKamie	2,725	2,575
Rodessa	1,150	1,165
Schuler	16,590	16,565
Smackover light	1,800	1,825
Smackover heavy	12,575	12,635
Troy	1,325	1,360
Urbana	2,690	2,750
Village	1,040	1,025
Total South Arkansas	73,965	74,070

MISSISSIPPI

Tinsley	74,225	73,950
Pickens	430	445
Total Mississippi	74,655	74,395

EAST TEXAS BORDER COMPLETIONS

Fields

Pine Island, Marion County: Wills & Reynolds 6 Burr, M. G. Nail Sur., 100 bbl. daily, 1,705 ft., T.D.

Extension of North Turner Valley Sought at Sarcee

By VICTOR LAURISTON

CHATHAM, Ont., Dec. 8.—Testing of the Sarcee Indian Reserve as a potential northerly extension of North Turner Valley will get under way some time this month, with at least five tests definitely planned. Eastern Canada interests are financing most of the operations. On the Highwood-Sarcee Oils holdings, Inland-Sarcee 1, LSD 2, 4-23-4w5, will resume from 1,300 ft., with Calmont Oils handling the drilling. Inland-Ontario 1 has been spotted in LSD 4, 9-23-4w5, and tentative location made for Inland-Ontario 2 in LSD 8, 8-23-4w5. Major Oils 11, LSD 12, 9-23-4w5, is rigging, to spud this month. Inland-Sarcee Development is making location in 33-22-4w5. Major 11, the most northerly location, is about 12 miles north and 5 miles west of the nearest North Turner Valley crude producer.

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Twin River, in Southern Alberta, to Be Drilled

S. Myron Zandmer and Frank E. Ruben group have disposed of their interests in Western Drilling Co. to E. L. Cord of Los Angeles and formed a new company, Paragon Oils, to develop acreage on the Twin River and Del Bonita structures in southern Alberta. Several tests in this general area have got good shows of light crude, with possible commercial production, at the Madison limestone contact.

Paragon Oils has secured drilling equipment in California, with one unit already delivered, and will start operations in the spring, the program including development of acreage of Terminal Oils and Alberta-Washington Petroleums. Most of the acreage is leased from the Alberta Government or the Canadian Pacific Railway.

Abasand Oils to Rebuild

Abasand Oils, Ltd., will commerce work at once on rebuilding of the plant recently destroyed by fire, which included separation plant, boiler house, blacksmith and machine shop. Loss is estimated at $200,000. The refinery, oil storage and workmen's residences were undamaged. The plant, located in the Tar sand district of Northern Alberta near McMurray has been in commercial operation since last May, producing gasoline and diesel oil.

Production Continues Above 26,000 Bbl.: Allowable Set

Crude and natural gasoline production from all Alberta fields for the week ending November 24 averaged 28,799 bbl. daily compared with 27,991 bbl. daily for the previous week and 29,936 bbl. daily for the corresponding week last year. The daily average included 27,688 bbl. of crude and 814 bbl. of natural gasoline from Turner Valley and 297 bbl. crude from outside fields. There were 189 producing wells with 34 drilling, 9 testing, 1 suspended, 1 abandoned, 1 finished, 2 spudded and 1 new drilling license issued.

TURNER VALLEY LIME TESTS

North Turner Valley: Major Oils 3, LSD 1, 8-21-3w5, T.D. 8,120 ft., Madison at 7,655 ft., temporary allowable of 900 bbl., has produced an test at the rate of 1,600 bbl. daily of 40-gravity crude, and is expected to get an ultimate allowable around 1,000 bbl. This is the most northerly producer yet completed.

Royalite Oil 58, LSD 7, 22-20-3w5, T.D. 7,787 ft., Madison at 7,220 ft., produced over 2,200 bbl. in 24 hr. after acidizing with 6,000 gal., completing official tests.

SHALLOW CRUDE AREAS

Lloydminster: Dina-Omega 1, LSD 14, 9-45-1w4, T.D. 1,706 ft., cemented and testing production, with a good well indicated. Location, in the Battle River Valley 30 miles south of Lloydminster, *opens a new area.* Dina-Omega 2 to start this month.

Vermilion: Princeville 2, LSD 1, 31-50-5w4, T.D. 1,792 ft., swabbed of circulating fluid when fresh crude rose 1,260 ft. within an hour, later started to flow, pump installed for definite production test; *opens a new producing area in the field 6 miles east of Vermilion and 1 mile north of the older producing area.*

Vermilion Consolidated 12, LSD 3, 23-49-6w4, completed in oil sand and waiting production test, considerably south of proven field.

Western Battleview 3, south of field, cemented in top of sand, testing with good production indicated.

ONTARIO OPERATIONS

In Ontario, Coates Syndicate 2, Lot 13, Concession 13, Windham Township, was dry in the Clinton formation but deepened to 1,200 ft. to get 50,000 cu. ft. a day in the white Medina. As a result, Dominion Natural Gas Co. and other interests operating in this area are planning to deepen practically all their wells to the lower horizon.

Chatham Township: Union Gas 45, Lot 17, Concession 10, T.D. 1,595 ft., over 1,000,000 cu. ft. a day.

Union Gas 46, Lot 22, Concession 8, T.D. 1,760 ft., dry hole.

Malahide Township: Union Gas 75, Lot 3, Concession 4, T.D. below 1,100 ft., dry hole.

Union Gas 76, Lot 24, Concession 5, T.D. 1,076 ft., 85,000 cu. ft. daily.

Central Pipe Line Co. 3 E. E. Brown, Lot 29, Concession 5, T.D. 1,175 ft., 150,000 cu. ft. daily.

Culross Township: Union-Dominion et al 1 Armstrong. Lot 5, Concession 8, T.D. below 1,100 ft., dry hole.

Windham Township: Dominion Natural Gas, Lot 16, Concession 14, T.D. below 1,160 ft., 600,000 cu. ft. daily.

New Roscommon Pool Opened; State to Offer More Leases

By OTTO C. PRESSPRICH

SAGINAW, Mich., Dec. 8.—While a wildcat test indicated the opening of a second oil pool in Roscommon County, big new wells boosted initial potential of the rapidly growing Reed City field by more than 36,000 bbl. a day last week and new developments in the Winterfield-Clare gas field raised that area to a major spot for Michigan reserves, the state Conservation Department made arrangements to meet the growing demand for exploratory acreage by arranging for a January lease auction of 75,000 acres of state-owned lands.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Allegan County	1	40	1,371
Arenac County	2	1,204	3,189
Bay County	1	125	2,920
Clare County	1	600	3,780
Osceola County	5	36,475	17,893
Roscommon County	1	2,472	3,449
Van Buren County	2	100	2,571
Gas wells: Clare County	2	*26.15	2,701
Osceola County	1	*7.83	1,226
Dry holes: Allegan County	3	.....	4,693
Arenac County	1	.....	1,528
Clare County	1	.....	1,620
Osceola County	1	.....	1,585
Van Buren County	1	.....	1,053
Total	23	.....	33,479

*Million cu. ft.

This year's Roscommon discoveries and the development in Lincoln Township (Reed City), Osceola County, have highlighted the search for new reserves which has reached unprecedented proportions.

The office of Fred P. Struhsaker, chief of the lands division, in Lansing, observing that 300,000 acres of state-owned lands already is under lease to gas and oil operators, announced that requests have more than trebled in the past 2 weeks, resulting in the decision to offer the 75,000 acres additional next month to permit continuance of the development spurt.

"We see no sign of a letup," commented F. R. Frye, chief of the geology division. "The demand springs from the prolific pay from the Reed City and Roscommon County (Headquarters) fields."

The number of producing wells in the Reed City area approached the 100 mark last week. There were five new wells, one of them among the best ever developed in the field. In Roscommon's Roscommon Township a score of tests were under way as a result of a half dozen good wells, with more scheduled as a result of the encouraging outlook resulting from the Richfield Township wildcat.

The January oil and gas leases auction will offer 20,000 acres in Kalkaska County, 15,000 in Crawford, 10,000 in Osceola, 10,000 in Missaukee, 5,000 in Roscommon, and smaller tracts in various other counties, Mr. Struhsaker announced.

Roscommon County Development

Results in Second Discovery

The Richfield-Roscommon wildcat was reported flowing and swabbing between 25 and 30 bbl. a day. Located in Section 29, it is Sun Oil Co. 1 Bauman, drilled into Dundee to almost 4,200 ft. Operators were continuing drilling in the hopes of boosting the potential.

Meanwhile, the Headquarters development, brought about completion of Ohio Oil Co.-Eugene Hilliard 1 State, in Section 34, for natural flow initially at a rate of 2,472 bbl. a day. Also at completion stage was Ohio Oil Co. 1-A State, in Section 33, indications being that it will rate as high as the other. Traverse completion was near, also, for Sun Oil Co. A-1 State, in Section 33, which if successful will provide ½-mile westerly extension.

Newest Reed City Well

Rated at 12,000 Bbl.

Pure Oil Co.'s big Reed City well, 4 Mitchell, in Section 30, was rated at 11,827 bbl. a day. The well flowed more than 600 bbl. the first hour, plus 50 bbl. or more that was lost when storage facilities proved inadequate. Almost as good a well was Ohio Oil Co. A-1 Johnson, in Section 28, its potential placed at 8,888 bbl. a day, while Ohio Oil 2 Sitts, Section 29, rated 7,200 bbl., Pure 1 Richard, Section 19, was good for 6,400 bbl. and Pure 2 Dunn, Section 20, gaged 2,160 bbl. a day initially. In Section 17, Taggart Brothers Co. brought in a gas well rating nearly 8,000,000 cu. ft., but another Taggart gas test, in Section 5, was dry.

Acid Raises Arenac County

Well to 1,200 Bbl.

Arenac County development was highlighted by completion of Ervin & Major B-1 Moore, in which potential jumped to 1,200 bbl. a day, after the test was acidized. It is in Section 22. However, in the same section, acid treatment gave the Ervin & Major 1 Codner, a potential of only 4 bbl. and in Deep River Township, the W. E. Ross 1 Vaughn gas test failed.

Both Gas and Oil

Developments Encouraging

Along with the new gas reserve indicated by Winterfield development in Clare County, the oil field's potential jumped again as Pure Oil Co. reported its 1 Riker, Section 29, good for 600 bbl. a day, after acid.

The week brought two more gas wells for Winterfield, one rating 17,700,000 cu. ft., the other 8,450,000 cu. ft. Both were drilled by Taggart Brothers. The field now has about 25 producers and Taggart Brothers, using two rotaries, have surveyed locations for more than a score of other tests. The field's gas reserve now is being estimated as high as 25 billion feet.

Monitor Field Also Active

Pushed out of the limelight by the more spectacular developments, activities in the Monitor field, Bay County, going ahead steadily, are bringing that section to greater importance. Latest addition to the field is Chapman Oil Co. 3 Rechsteiner, in Section 3, which settled to 125 bbl. a day, after producing 418 bbl. in 18 hours after acid treatment. In the new Hopkins-Allegan development, in the state's southwestern oil area, one small producer and two dry holes were recorded while new Bloomingdale-Van Buren wells both were rated at 50 bbl. a day.

In all, the week brought 23 completions and 1 abandoned location. The list included 13 oil wells, 3 gas wells, 7 dry holes.

Year's Permits Will Pass One Thousand

Another year with more than 1,000 drilling permits appeared certain as the state Conservation Department, reporting 22 additional franchises for the week, announced the 1941 total to date as 944. Interest in Osceola County continues, that section being location for six of the new tests. Allegan and Arenac counties are locations for four each. Eight other counties share the remainder, they being Clare, Gladwin, Isabella, Saginaw, Sanilac, St. Clair, Tuscola and Roscommon.

MICHIGAN COMPLETIONS

Allegan County

Heath Township: Davell Petroleum Co., Inc., 1 Peterham estate, NW NW SE 3-3n-14w, dry, Traverse lime, T.D. 1,537 ft.

Hopkins Township: Fisher-McCall Oil & Gas, Inc., 1 Connor, SW SE SW 5-3n-12w, dry, T.D. 1,595 ft.

Ide Oil & Gas Corp. 1 Wilkins, SW SW NW Sec. 17, dry, T.D. 1,561 ft.

Trow Township: Chris Schrauben, Tr., 1 Wilson, NW SW SW 21-1n-13w, pumping 40 bbl., salt water, acidized, T.D. 1,371 ft.

Arenac County

Adams Township: Don Rayburn and Ervin Major 1 Codner, SE NE NW 22-19n-3e, 4 bbl., acidized, T.D. 2,001½ ft.

Rayburn & Major B-1 Moore, NE SW SE Sec. 22, est. 1,200 bbl., acidized, T.D. 2,987 ft.

Deep River Township: W. E. Ross 1 Vaughn Comm., C NW 17-19n-4e, dry, T.D. 1,528 ft.

Bay County

Monitor Township: Chapman Oil Co. 3 Rechsteiner, NW SE NE 3-14n-4e, 418 bbl., first 18 hr., settling to 125 bbl. daily, acidized, T.D. 2,920 ft.

Clare County

Winterfield Township: Taggart Bros. Co. 52 Lockwood-Johnson-Peters, C NW 20-20n-6w, 8,450,000 cu. ft. gas, T.D. 1,353 ft.

Pure Oil Co. 1 Riker, C W½ SW NE Sec. 29, 600 bbl., acid, T.D. 3,780 ft.

Taggart Bros. Co. 101 Flynn-Sample-Barhite, C SW Sec. 30, 17,700,000 cu. ft. gas, T.D. 1,347½ ft.

Pure Oil Co. 1 McClain, C E½ SE SE Sec. 30, dry, T.D. 1,620 ft.

Pure Oil Co. A-2 Egts, C W½ NW NW Sec. 32, location abandoned.

Osceola County

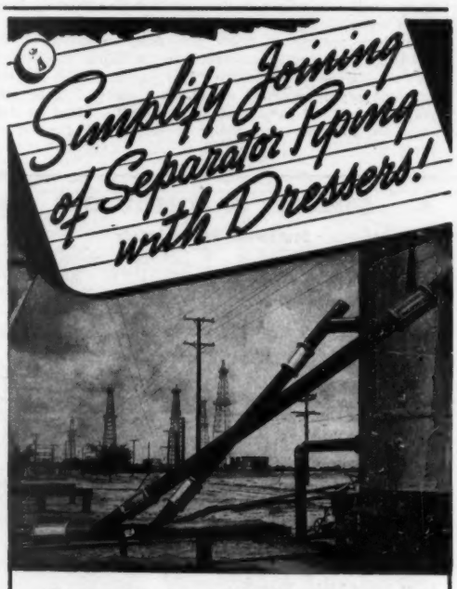
Lincoln Township: Taggart Bros. Co. 2 Diehlman-Crawford, SW SE NW 5-18n-10w, dry, T.D. 1,585 ft.

Taggart Bros. Co. 27 Eichenberg, C NW Sec. 17, 7,830,000 cu. ft. gas, T.D. 1,226 ft.

Pure Oil Co. 1 Richard, C S½ NE SE Sec. 19, 6,400 bbl., T.D. 3,613 ft.

Pure Oil Co. 2 Dunn, C N½ SW SE Sec. 20, 2,160 bbl., T.D. 3,543 ft.

(Continued on Next Page)



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HOUSTON

New Production Inadequate To Demand, Stocks Drop

By STAFF CORRESPONDENT

PITTSBURGH, Pa., Dec. 8.—A large number of wells were completed in the lower eastern fields during the past week which included some fair gas wells in all districts. The early winter decline in production totals is evidencing itself earlier than usual and new production in Pennsylvania and West Virginia has been unable to offset it thus making the present runs from wells in those districts now less than in October. Operators appear to view the daily withdrawal on existing stocks with indifference probably caused by the ceiling price structure. During the week 66 operations were reported of which 8 were dry, 35 gas wells and 21 oil producers with a daily initial of 140 bbl. In addition two wells were drilled for water flooding.

SUMMARY OF COMPLETIONS

Southwest Pennsylvania

	No.	Bbl.	Footage
Oil wells	1	20	3,070
Gas wells	6	*0.5	14,288
Total	7		17,358

West Virginia

	No.	Bbl.	Footage
Oil wells	5	48	8,968
Gas wells: Oriskany	4	*28.2	20,342
Others	16	*5.6	36,932
Dry holes	3		10,964
Total	28		77,286

*Million cu. ft.

Deep Tests Make Progress

On Chestnut Ridge in South Union Township, Fayette County, Pennsylvania, Peoples Natural Gas Co. 4 Piedmont Coal Co. is slowly drilling at 7,690 ft. and has not reached the Onondaga lime which will make this test very deep and possibly on the down throw side of the west flank fault. It will be interesting to discover whether the Onondaga chert beds and Oriskany sand will produce at that depth.

Here, New Penn Development Co. William E. Snee et al are fishing at 6,691 ft. in 1 Kirby and trying to jar the tools loose. In 1 Carothers casing was run but lodged at 5,400 ft. and the casing pulled. The tools are now trying to find the old hole which had been bottomed at 7,076 ft. In 4 Heyn, these operators are drilling at 4,300 ft. Greensboro Gas Co. is drilling at 6,968 ft. in 1 Barton after running casing to 6,934 ft.

In South Huntington Township, Fayette County, Peoples Natural Gas Co. is shut down at 5,795 ft. in the test on the Jacobs Creek Oil Co. on the Fayette anticline. In Richhill Township, Greene County, Natural Gas Co. of West Virginia is drilling at 5,700 ft. in the test on the Andrew Workman farm. In Center Township, Beaver County, St. Joseph Lead Co. is drilling at 2,055 ft. in the test on the J. P. Koehler estate.

SOUTHWEST PENNSYLVANIA COMPLETIONS

Armstrong County

North Buffalo Township: Local Co. 1 M. Holly, 48,000 cu. ft. gas, gas sand Speechley, and Sheffield sand, T.D. 2,885 ft.

Parks Township: Apollo Gas 1 J. M. Riggle, drilled deeper, 110,000 cu. ft. gas, Bradford sand, T.D. 3,580 ft.

Plum Creek Township: Apollo Gas 2 Ira L. Smith, 135,000 cu. ft. gas, Thirty Foot Sand, T.D. 1,661 ft.

Clarion County

Clarion Township: Owens Illinois Glass 1 M. S. Albright, 43,000 cu. ft. gas, Speechley sand, T.D. 2,625 ft.

Mill Creek Oil & Gas 1 J. A. Aaron, 47,000 cu. ft. gas, sixth sand, T.D. 2,207 ft.

Fayette County

German Township: Fike & Spaugy 1 Robert Tomosek, drilled deeper, 100,000 cu. ft. gas, Big Injun 1,112 ft., gas 1,223 ft., T.D. 1,300 ft.

Greene County

Richhill Township: Manufacturers Light & Heat 1 Henry Dinsmore, drilled deeper, 760,000 cu. ft. gas, Big Injun sand 1,803 ft., gas 1,872 ft., T.D. 1,884 ft.

Washington County

South Franklin Township: Carnegie Natural 4 Harvey Taylor heirs, 20 bbl., Fifth sand 3,038 ft., oil 3,054-3,065 ft., T.D. 3,070 ft.

West Virginia Well Misses Oil-Producing Lens

A north offset to the Homer C. Jones farm, on which a fair oil production has been developed by the Columbian Carbon Co., was drilled by the South Penn Natural Gas Co. through the Big lime, the oil-producing horizon, and it proved dry at 1,734 ft. It is located on the A. L. Robinson farm and may have been a location west of the lens. A second test a location to the east has been started.

In Grant district, Wetzel County, the 17 Mike Barr which was drilled by the Hope Natural Gas Co. is still untested for any duration as additional tankage must be set. With the tools only 1 ft. in the pay of Big Injun sand, 2,359½ ft., when opened it flowed about 35 bbl. an hour.

WEST VIRGINIA COMPLETIONS

Calhoun County

Center district: Ayers & Carroll 3 R. C. Hardman, 85,000 cu. ft. gas, Injun sand, T.D. 2,046 ft.

Sherman district: McCall Drilling 4 Jacobs Realty Co., 10 bbl., Injun sand, T.D. 1,980 ft.

Washington district: Hope Natural 8583 Louis Bennett, 2,268,000 cu. ft. gas, Maxton sand 1,863-1,935 ft., Big lime 2,050 ft., gas 1,902-05 ft., gas 2,081-85 ft., T.D. 2,087 ft.

Clay County

Buffalo district: Pittsburgh & West Virginia 7811 F. L. Hall, 284,000 cu. ft. gas after shot, Big Injun sand, T.D. 2,298 ft.

Pittsburgh & West Virginia Gas Co. 7795 Elk River Coal & Iron Co., 59,000 cu. ft. gas before shot, T.D. 2,177 ft. in Big Injun sand.

Henry district: Virginian Gasoline & Oil 1307V Brown, Swann & Goshorn, 8 bbl., Injun sand, T.D. 1,862 ft.

Gilmer County

DeKalb district: Carnegie Natural 1561 G. W. Neely, 239,000 cu. ft. gas, sand 1,395-1,495 ft., Big lime 1,630-1,715 ft., Big Injun 1,715-96 ft., gas 1,440-50 ft., gas 1,614-16 ft., gas 1,650 ft., gas 1,784-90 ft., shot 1,631-51 ft., shot 1,766-91 ft., T.D. 1,798 ft.

Carnegie Natural 1564 Mary A. Wiant, 84,000 cu. ft. gas, Salt sand 1,360-1,430 ft., 1,465-80 ft., 1,546-50 ft., Big lime 1,565-1,623 ft., Big Injun 1,623-1,718 ft., gas 1,395-1,400 ft., shot 1,390-1,410 ft.

Kanawha County

Big Sandy district: Peter Silman 31 James F. Brown, 5 bbl., Weir sand, T.D. 2,156 ft.

Lewis County

Collins Settlement district: Mud Lick Oil & Gas 6 E. G. Davison, 48,300 cu. ft. gas, Gordon sand 2,110-2,136 ft., gas 2,115-18 ft., T.D. 2,391 ft.

Lincoln County

Jefferson district: Kanawha Gas 1 Sarah Chandler heirs, drilled deeper, 793,000 cu. ft. gas, start 2,265 ft., Brown shale 3,335-55 ft., 3,530-50 ft., 3,573-3,601 ft., shot 2,851-3,601 ft., 6,000 lb. gelatin.

Logan County

Logan district: Aldridge Gas 2 John Justice, 223,000 cu. ft. gas after shot, Big lime 1,745-1,915 ft., Injun 1,915-71 ft., Weir 2,070-2,141 ft., Berea 2,475-90 ft., gas in Weir 2,120 ft., T.D. 2,511 ft.

Boone County Gas 21 fee, dry, Big lime 2,425-2,588 ft., Injun 2,588-2,628 ft., Berea 3,147-70 ft., T.D. 3,190 ft., acidized after P.B. to 2,588 ft., show gas in Big lime.

Marion County

Mannington district: Thomas Bros. and H. C. Wilson 1 Martha E. Thomas, drilled deeper from 2,261 ft., 23,040 cu. ft. of gas from Fifty Foot sand, T.D. 3,312 ft.

Marshall County

Liberty district: Manufacturers 3616 Ward Huff, 140,000 cu. ft. gas, Fourth sand 3,228-40 ft., Fifth sand 3,257-59 ft., T.D. 3,294 ft.

Putnam County

Curry district: Randolph Gas 1 Riley Phelps, 84,000 cu. ft. gas, Big lime 1,719-1,879 ft., Injun 1,929-92 ft., Berea 2,418-42 ft., shot 2,418-60 ft. with 1,400 lb. Dentonite, T.D. 2,462 ft.

Ritchie County

Murphy district: L. P. Bickel 5 Ben and Leland Morris, 100,000 cu. ft. gas and ½ bbl. oil, Injun sand, T.D. 1,980 ft.

P. M. Lemon Oil & Gas 1 S. M. Scott, 100,000 cu. ft. gas and ¼ bbl. oil, Maxton sand, T.D. 1,601 ft.

W. H. Bickel 1 J. V. Reeves, 200,000 cu. ft. gas, Injun sand, T.D. 1,970 ft.

Watson Oil & Gas Co. 1 J. N. Haddox, 750,000 cu. ft. gas, Maxton sand, T.D. 1,825 ft.

Roane County

Harper district: O. H. Reed et al 2 M. J. Hughes No. 2 lease, 15 bbl., Salt sand, T.D. 1,840 ft.

Upshur County

Buckhannan district: Pittsburgh & West Virginia 7833 Berton Allman, 200,000 cu. ft. gas, Benson sand 4,526-47 ft., gas 4,531-45 ft., T.D. 4,562 ft., R.P. 630 lb.

Meade district: Cumberland & Allegheny 316 C. W. Elmer, 765,000 cu. ft. gas, Fourth sand 2,162-78 ft., gas 2,165-78 ft., T.D. 2,182 ft.

Wetzel County

Proctor district: Manufacturers 3617 William Estep, 50,000 cu. ft. gas which exhausted, Gordon sand 3,235 ft., T.D. 3,330 ft., abandoned.

Wood County

Walker district: Clifton Oil & Gas 1 Volcania Oil & Gas Co. 10 bbl., Berea, T.D. 1,130 ft.

ORISKANY GAS FIELDS

Jackson County

Ravenswood district: Columbian Carbon Co. 1 Homer Brown, dry, Corniferous lime 5,255 ft., 6 gal. water in 2 hr. at 5,393 ft., drilling 5,395 ft.

Ripley district: United Fuel Gas Co. 5044 J. B. Shinn, 17,436,000 cu. ft. gas before shot, Corniferous lime 4,975 ft., Oriskany 5,089 ft., R.P. 1,825 lb., T.D. 5,099 ft.

United Carbon 2 D. F. Hyre, 4,420,000 cu. ft. gas, before shot, Corniferous lime 4,844 ft., Oriskany 4,959 ft., drilling 4,980 ft.

Kanawha County

Elk district: Columbian Carbon 1 B. T. Crawford, dry, Corniferous lime 4,855 ft., Oriskany 5,017 ft., lime break 5,007-17 ft., T.D. 5,046 ft., no gas, abandoned.

Poca district: Godfrey L. Cabot 11 J. L. McLean heirs, 989,000 cu. ft. gas before shot, Corniferous lime 5,087 ft., Oriskany 5,196 ft., drilling 5,216 ft.

Godfrey L. Cabot 1 E. M. Derrick, 5,213,000 cu. ft. gas, Corniferous lime 4,974 ft., Oriskany 5,063 ft., shot 5,069-89 ft., R.P. 1,625 lb., T.D. 5,136 ft.

South Penn Natural 1 Clendenin-Robinson unit, 1,179,000 cu. ft. gas before shot, Corniferous lime 4,861 ft., Oriskany 5,083 ft., R.P. 1,340 lb., drilling 5,127 ft.

South Penn Natural 1 Marion Bostick, 1,073,000 cu. ft. gas before shot, Corniferous lime 5,818 ft., Oriskany 4,938 ft., R.P. 1,800 ft., drilling 4,973 ft.

Michigan Fields

(Continued from Preceding Page)

Ohio Oil Co. 2 Sitts, C S½ NW SW Sec. 29, 7,200 bbl., T.D. 3,549 ft.

Ohio Oil Co. A-1 Johnson, C S½ SW SW Sec. 29, 8,888 bbl., T.D. 3,583 ft.

Pure Oil Co. 4 Mitchell, C S½ NW NW Sec. 30, 827 bbl., T.D. 3,605 ft.

Roscommon County

Roscommon Township: Ohio Oil Co. and Eugene Hilliard 1 State, C S½ NE SE 34-21n-3w, 2,472 bbl., T.D. 3,449 ft.

Van Buren County

Bangor Township: Herbert Caley 1 Piper, SW SE NE 11-2s-16w, dry, T.D. 1,053 ft.

Bloomingdale Township: Bridger-Basin Oil Corp. 2 Melchind, NW SW SW 1-1s-14w, pumping 50 bbl., with water, acidized, T.D. 1,276 ft.

Homrich & Kendall 2 Powers, NE SW NE Sec. 10, 50 bbl., with water, acidized, T.D. 1,295 ft.

Texas Gulf Coast

(Continued from Page 92)

bbl., ¼-in. choke, perf. casing 8,300-35 ft., T.D. 8,572 ft.

Red Fish Reef, Chambers County: Humble 28-A State. 160 bbl., ⅛-in. choke, sand 8,702-10 ft.

West Ganado, Jackson County: Pure 1 Halamicek, 104 bbl., 8/64-in. choke, perf. casing 4,740-70 ft., T.D. 6,098 ft.

Pure 1 Kopecky, 82 bbl., 8/64-in. choke, perf. casing 4,783-88 ft., T.D. 6,375 ft.

Pure 1 Power, 104 bbl., ⅛-in. choke, perf. casing 4,732-60 ft., T.D. 6,332 ft.

West Ranch, Jackson County: Humble 5-B Vanderbilt, dry, T.D. 4,420 ft.

Magnolia 203-A West Ranch, 116 bbl., 7/64-in. choke, perf. casing 5,586-96 ft., T.D. 5,606 ft.

Magnolia 209-A West Ranch, 121 bbl., 9/64-in. choke, perf. casing 5,754-58 ft., T.D. 5,762 ft.

Magnolia 214-A West Ranch, 116 bbl., 7/64-in. choke, perf. casing 5,584-94 ft., T.D. 5,597 ft.

Withers, Wharton County: F. W. Michaux 2-A Pierce, 84 bbl., 5/32-in. choke, perf. casing 5,381-85 ft., T.D. 5,402 ft.

Texas 4-B A. C. Thompson, 52 bbl., 5/64-in. choke, perf. casing 5,540-42 ft., T.D. 5,547 ft.

Texas 101-C Pierce estate, 99 bbl., ⅛-in. choke, perf. casing 5,326-46 ft., T.D. 5,385 ft.

Discovery Near Pickens Flows from Eutaw Pay

By R. MARNE SANFORD

JACKSON, Miss., Dec. 8.—The State of Mississippi was given its fourth oil field the past week and one which offers the most promise of a major discovery since the opening of the Tinsley field. The discovery is still in the testing stages and is unnamed.

The discovery well for the new strike is Buzz Morgan 1 Whitworth, NW SW 4-11-3, Madison County and just 2 miles southeast of the Pickens field. Production was indicated several weeks ago when the section was first drilled, however, water developed and it was deepened. It was plugged back the past week and perforated with 40 shots between 4,824-33 ft. in the Eutaw formation, thought to be about the same level as one of the Tinsley pays. The well came in flowing oil with some b.s. and water. No apparent formation yield of salt water was noted. The well made 562 bbl. of oil in the 16 hours. The first hour's gage showed 43.2 bbl. of fluid through 1-in. choke under tubing and casing pressures of 30 lb. and 110 lb., respectively. By the eighth hour the gage was 18.96 bbl. for the hour period with the flow through ½-in. choke at this time and the tubing pressure having risen to 75 lb. and the casing pressure up to 155 lb. The sixteenth and last hour of the gage the well made 27.7 bbl. of fluid through ¼-in. choke with tubing pressure now up to 140 lb. and the casing pressure up to 250 lb. A late gage as the week closed gave the well a flow of 588 bbl. of fluid in 21 hours, about 10 per cent being b.s. and water. The flow was under casing pressure of 350 lb. and tubing pressure of 400 lb., and through ⅛-in. choke.

The wildcat has reported the top of the Wilcox zone at 1,206 ft., Midway at 3,056 ft., Clayton at 3,810 ft., Selma 3,840 ft., Eutaw 4,778 ft., and base of the Wilburn at 4,899 ft. The test was drilled on an 80-acre tract held by Mr. Morgan, a former Shreveport geologist, while the remainder of the large block was taken over by Phillips Petroleum Co. For this reason immediate development is expected by this company on its surrounding leases. Carter Oil Co. holds considerable acreage on the outer edge of the discovery block.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Tinsley	3	1,560	15,090
Dry holes: Tinsley	1	.....	5,275
Total	4	.....	20,365

OIL AND GAS LEASE

United States Department of Agriculture, Forest Service, Muskegon, Michigan, December 1, 1941. Sealed bids in triplicate will be received until 10:00 A.M. Eastern Standard Time, Jan. 17, 1942, and then publicly opened, offering bonus for operating rights in connection with gas and oil leases on land located in the State of Michigan, Mason County, Logan Township, T17N, R15W, Section 6, SE NW, E½ SW NW, W½ NE SW, W½ SE SW, E½ NW SW, SW NW SW, SW SW; Section 7, N½ NW, SW NW, W½ SE NW, E½ NW SW, W½ NE SW, SE NE SW, N½ SE SW, S½ NW SE, N½ SW SE; Section 8, N½ SW, SE SW, N½ SW SW, S½ SE, S½ NE SE; Section 9, S½ SW, N½ SE, SW SE. Award of lease will be made only to bidder who can show sufficient experience and financial resources and prove citizenship. Interested parties may obtain bid documents lease forms, and operating regulations from the Forest Supervisor, Forest Service, Muskegon, Michigan.

LEGAL

Department of the Interior, General Land Office, Washington, D. C. Notice is hereby given that the oil and gas deposits in the following lands in the Caddo oil and gas field, Louisiana, are offered to the responsible qualified bidder of the highest bonus per acre, pursuant to the provisions of Section 17 of the leasing act of February 25, 1920 (41 Stat. 437), as amended by the act of August 21, 1935 (49 Stat. 674) at the royalty rate scale in the lease form shown in Circular 1386, at a sale to be held in the Federal Court Room, Post Office Building, Shreveport, Louisiana, at 10:00 o'clock on December 19, 1941: Parcel No. 1—S½ NE¼, W½ SE¼ Sec. 31, T. 20 N., R. 15 W., lot 1 Sec. 25, lots 1 and 3 Sec. 32, lots 1 and 2 Sec. 36, T. 20 N., R. 16 W., 274.27 acres; Parcel No. 2—all, fractional Sec. 20, T. 20 N., R. 16 W., 37.83 acres; Parcel No. 3—lot 3 Sec. 3, lots 3, 4, 5, Sec. 4, lots 5 and 6 Sec. 9, lots 6, 7, 8, 9, 10 Sec. 10, lot 1 Sec. 12, lots 1 and 2 Sec. 15, lot 1 Sec. 16, T. 20 N., R. 16 W., 307.68 acres; Parcel No. 4—SE¼ Sec. 9, E½ SE¼ Sec. 11, N½ SW¼, NW¼ SE¼ Sec. 12, T. 21 N., R. 16 W., 360.46 acres. The successful bidder must deposit on the day of the sale a certified check on a solvent bank, or cash, for one-fifth of the amount of each bid and file the showing of qualifications to receive a lease required by Section 7 of General Land Office Circular 1386. The remaining four-fifths, together with the annual rental in advance at the rate of $1 per acre, must be paid, and a $5,000 corporate surety bond must be furnished, prior to the issuance of the lease. The bidders are warned against violation of the provisions of Section 59 of the United States Criminal Code approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids at the discretion of the Secretary of the Interior.

Wildcat Locations Most Plentiful in Weeks

There were three new wildcats staked in Mississippi the past week and one new location in Georgia. The Mississippi locations were as follows: In Adams County, L. H. Simpson 1 Fairchild Island Planting Co., SE SE 18-9n-2w, a subsurface geological prospect; in Hinds County, Plains Production Co. 1 Halifax Plantation, NE SW NW 1-7n-4w, a seismograph prospect, and Warren County, Placid Oil 1 Anderson-Tully, NE SW 36-17n-5e, a surface and subsurface prospect between two salt domes.

The Georgia location was by J. R. Sealy as 1 J. R. Sealy, located 330 ft. north and 330 ft. west of the SE cor. of Lot 116, second land district. It is a magnetometer prospect. Contract depth was not announced, for this wildcat, nor for any of the Mississippi tests.

MISSISSIPPI COMPLETIONS

Tinsley, Yazoo County: Hassie Hunt 5 Sorrells, NW NE NE 31-10n-2w, Woodruff 4,962-82 ft., T.D. 4,981 ft., pumped 280 bbl. daily.

E. C. Johnson 4 Tom Stutts, SE NW SW 31-10n-2w, T.D. 5,077 ft., perf casing 5,010-26 ft., pumped 20 bbl. hourly.

Key & Beckett 1 R. Adams, SW SE SW 35-10n-3w, Perry sand 5,194 ft., dry at 5,275 ft.

Kirby Pet. 7 G. W. Stutts, SW SE SE 30-10n-2w, Woodruff 4,959 ft., T.D 5,032 ft., pumped 800 bbl. daily.

Rocky Mountain Runs

Production estimates for week ended December 6:

WYOMING

	Bbl.
Salt Creek	14,360
Big Muddy	1,140
Badger Basin	150
Black Mountain	60
Byron	4,200
Cody Dome	40
Cole Creek	910
Dallas Derby	400
Dutton Creek	60
East Mahoney-Ferris	190
Elk Basin	250
Frannie	3,030
Garland	1,480
Grass Creek	270
Hamilton Dome	950
Hidden Dome	70
Hudson	270
LaBarge	2,290
Lance Creek	23,090
Lost Soldier	7,400
Mahoney	1,150
Maverick Springs	2,920
Medicine Bow	710
Mule Creek	410
Oregon Basin	8,640
Osage	500
Pilot Butte	20
Poison Spider	250
Quealy Dome	370
Rex Lake	60
Rock River	2,590
South Casper Creek	480
Teapot	20
Warm Springs	70
Wertz	5,290
Total Wyoming	84,090

COLORADO

Iles Dome	1,420
Florence	190
Fort Collins and Wellington	330
Wilson Creek	1,840
Moffat	370
Rangely	200
Tow Creek	150
Price	250
Hiawatha	530
Powder Wash	180
Total Colorado	5,460

MONTANA

Kevin-Sunburst	5,110
Border	50
Cat Creek	460
Cut Bank	14,550
Dry Creek	400
Pondera	840
Total Montana	21,410

NEW MEXICO

Arrowhead	4,310
Cooper	3,020
Eaves	880
Eunice	19,170
Halfway	340
Hardy	2,070
Hobbs	10,640
Jal	400
Langlie	3,860
Lynch	450
Lynn	1,050
Mattix	3,620
Monument	20,520
Penrose	3,130
Rhoades	490
Salt Lake	170
Skaggs	70
Skelly	1,640
South Eunice	2,820
South Lovington	1,610
Vacuum	14,100
West Eunice	560
Artesia-Maljamar	21,970
Getty	150
Hogback	200
Rattlesnake	270
Table Mesa	100
Total New Mexico	117,680

WIRE LINES LAST LONGER
CREWS WORK BETTER

Stop scattering mud and oil over the derrick floor, the machinery and the crew. Work better, faster and safer with the good housekeeping that Patterson-Ballagh Wire Line Wipers insure. Save wire, water and mud weighting material.

Made in two styles—style A for wells not yet producing, and style B shown here for wells in production. Style B has a cast steel housing and an easily replaceable one piece spiral rubber refill. Equipped with hold-down chains and safety release. Non-sparking. Will wipe hundreds of miles of wire line before rubber needs replacement. See Composite Catalog.

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Contracts accepted for domestic and foreign projects, using the most improved instrumental and interpretative technique.
GIDDENS-LANE BUILDING -:- SHREVEPORT, LA.

PRIORITIES—Text of Preference Rating Order P-83

(Continued from Page 31)

4. "Refining" means the operation of a plant or plants, other than those specified in Subparagraph 3, for the production of finished or unfinished petroleum products (including but not limited to hydrocarbon oils or gases).

5. "Transportation" means the operation of all petroleum terminal and terminal storage facilities and the operation of all pipe lines and gathering systems for the transportation of petroleum from facilities where petroleum is first gaged to any refining or local distribution facility and from any refining facility to any marketing or local distribution facility, except that in no case shall transportation include distribution of natural gas by means of local distribution facilities.

6. "Marketing" means the operation of all facilities, other than those specified in Subparagraph 5, for the distribution of petroleum products (not including natural gas) to service stations or to consumers, including without limitation service stations, substations, bulk plants, warehouses, and wholesale depots.

7. "Subsupplier" means any person with whom a contract or purchase order has been placed for delivery: (i) To a supply house, of material which has been specifically authorized for rating on Form PD-82(*a*). (ii) To another subsupplier, of material which will be physically or chemically incorporated into material to be delivered to a supply house under a rating authorized pursuant to this order.

8. "Material" means any commodity, equipment, accessories, parts, assemblies or products of any kind.

(b) Assignment of preference rating.

Preference Rating A-8 is hereby assigned: (1) to deliveries to the supply house of those quantities of material which may be specifically authorized for rating on Form PD-82(*a*) by the director of priorities, and (2) to deliveries to any subsupplier of material which will be physically or chemically incorporated into material to be delivered to the supply house under a rating authorized pursuant to this order.

(c) Persons entitled to apply preference ratings.

The preference rating hereby assigned may be applied, in the manner and to the extent hereby authorized by (1) the supply house, and (2) any subsupplier who has been furnished with a signed copy of this order in the manner specified in Paragraph *e*.

(d) Restrictions on use of rating.

1. *Restrictions on supply house.*—The supply house may apply the preference rating only to those quantities and kinds of material specifically authorized for rating by the director of priorities on Form PD-82(*a*).

2. *Restrictions on subsupplier.*—No subsupplier may apply said rating: (i) unless the material to be delivered to him is itself required to enable him to make a rated delivery to the supply house or to another subsupplier; *Provided*, that no delivery of material to such subsupplier shall be deemed to be required unless the subsupplier cannot make his rated deliveries and still retain a minimum practicable working inventory; (ii) to obtain deliveries greater in quantity or on dates earlier than required for the delivery on schedule of the material rated under this order; (iii) to obtain deliveries of material which will not be physically or chemically incorporated into material the delivery of which to the supply house has been authorized for rating on Form PD-82(*a*).

(e) Application of preference rating.

The supply house or any subsupplier, in order to apply the preference rating to deliveries to him must:

1. Sign the acceptance at the end of a copy of this order, detach it and file such signed acceptance with the director of priorities: *Provided*, that after one such acceptance of Preference Rating Order P-83 shall have been duly filed as herein provided, no additional acceptance need be filed for subsequent applications of said order, whether such subsequent applications shall be of an order bearing the same or different serial number from the order accepted; and

2. Furnish one copy of Preference Rating Order P-83, together with an unsigned form of acceptance thereof, to each of his subsuppliers with whom he has placed a contract or purchase order for material to the delivery of which he elects to apply the preference rating hereby assigned. After one such copy of said order, regardless of serial number, has been furnished to a particular subsupplier, no additional copy of said order need be furnished to that subsupplier to cover any subsequent applications of the preference rating hereby assigned.

3. The supply house and each subsupplier, in order to apply the preference rating hereby assigned to deliveries to him, must endorse the following statement on the original and on all copies of each purchase order or contract for material authorized for rating on Form PD-82(*a*), or to be physically or chemically incorporated into such material:

> "Preference Rating A-8, Purchase Order for material pursuant to Preference Rating Order P-83, Serial No. . . , with which I am familiar."

The endorsement shall be manually signed by an authorized official of the supply house or subsupplier and the original, or a copy of the purchase order shall be delivered to the seller of such material. Such endorsement shall constitute a certification to the Office of Production Management that the supply house or subsupplier is entitled to apply the rating to such delivery pursuant to this order. Such purchase order or contract shall not include any material, the delivery of which is not rated pursuant to this order.

4. A subsupplier who has been furnished with a copy of Preference Rating Order P-83, by two or more supply houses, or subsuppliers, and who has received from such supply house or subsuppliers, endorsed purchase orders or contracts for material rated pursuant to this order, may include in a single purchase order or contract, any part, or all, of the material which he requires to make his rated deliveries to such supply houses or subsuppliers, but must specify in the endorsement on such single purchase order, all of the serial numbers contained in the purchase orders which have been so received by him and to fill which he is applying the preference rating.

6. The preference rating hereby assigned may be applied only to written purchase orders or contracts.

(f) Restrictions on deliveries by supply houses.

No supply house may make deliveries of material obtained by application of the preference rating hereby assigned except under purchase orders or contracts bearing a preference rating assigned by the director of priorities.

(g) Records.

In addition to the records required to be kept under Priorities Regulation 1, the supply house, and each subsupplier placing or receiving any purchase order or contract rated hereunder, shall each retain, for a period of 2 years, for inspection by representatives of the Office of Production Management, endorsed copies of all such purchase orders or contracts, whether accepted or rejected, segregated from all other purchase orders or contracts or filed in such manner that they can be readily segregated for such inspection.

(h) Communications to Office of Petroleum Coordinator.

Acceptances of this order, all reports required to be filed hereunder, and all communications concerning this order, shall, unless otherwise directed, be addressed to: "Office of Petroleum Coordinator, Washington, D. C. Ref: P-83"

(i) Violations.

Any person who wilfully violates any provision of this order or who by any act or omission falsifies records to be kept or information to be furnished pursuant to this order may be prohibited from receiving further deliveries of any material subject to allocation, and such further action may be taken as is deemed appropriate, including a recommendation for prosecution under Section 35(A) of the criminal code (18 U.S.C. 80).

(j) Revocation or amendment.

This order may be revoked or amended at any time as to the supply house or any subsupplier. In the event of revocation, deliveries already rated pursuant to this order shall be completed in accordance with said rating, unless the rating has been specifically revoked with respect thereto. No additional applications of the rating to other deliveries shall thereafter be made by the supply house or subsupplier affected by such revocation.

(k) Applicability of Priorities Regulation No. 1.

This order and all transactions affected thereby are subject to the provisions of Priorities Regulation 1, as amended from time to time, except to the extent that any provisions hereof may be inconsistent therewith, in which case the provisions of this order shall govern.

(l) Effective date.

This order shall take effect on the date specified in the heading hereof, and shall continue in effect until revoked. Issued this 8th day of December 1941.

Acceptance of Preference Rating Order P-83

To:

Name of Supply House .....

Address .....

Serial No. ..... Date .....

To be detached from the foregoing order, signed by an authorized official of the supply house or subsupplier, and returned to the Office of Petroleum Coordinator, Washington, D. C., before the supply house and subsupplier applies the preference rating assigned by the foregoing order.

The supply house or subsupplier should execute only the acceptance which he returned to the Office of Petroleum Coordinator. He should not execute the acceptance attached to the copies of the order which he furnishes to other persons when he first applies the preference rating.

(Before signing this acceptance, read carefully sections (c), (d), (e) and (f) of the foregoing order.)

The supply house or subsupplier named below hereby accepts Preference Rating Order P-83 and certifies to the Director of Priorities of the Office of Production Management that he is entitled to apply the preference rating assigned in said order in accordance with its terms.

Dated this .... day of ....., 194..

.....

Legal name of supply house or subsupplier

By .....

Name and title of authorized individual

Section 35(a) of the Criminal Code, 18 U.S.C. 80, makes it a criminal offense to make a false statement of representation to any department or agency of the United States as to any matter within its jurisdiction.

The supply house may obtain additional copies of Preference Rating Order P-83 from the Office of Petroleum Coordinator, Washington, D. C. Subsuppliers may not obtain such copies from the Office of Petroleum Coordinator, but should procure them from the supply house. This order cannot be reproduced by either the supply house or the subsupplier.

Major-Field Need Demands Outpost-Area Exploration

(Continued from Page 30)

geological facts. Regardless of the considerations upon which the first wells were drilled, geologists would sooner or later have influenced operators to spend money in trying to find where this known reservoir produced on the flanks of this known structure.

The Cycle of Exploration

The concepts upon which exploration has taken place have not always been formulated prior to the drilling of the discovery wells. Many times major plays have been opened by random drilling. However, in these cases the geologist has had an explanation for the discovery of oil in the area and, what is more important, he has been able to go out and find more oil in structures of the same type.

Sometimes the concepts have been known to the industry and have been disregarded for years until some "trigger" started things moving. Sometimes the trigger which made a big play out of a one-company program was the tendency to follow the leader. Without going into the philosophy of the matter, which would take a great deal of space and not achieve any valuable result, we may consider a play—the Illinois basin play. Here we find that a single cycle soon broke up into three and possibly more.

The fact that the Cypress and Benoist would produce in the basin had been known for nearly 30 years. Sandoval, Carlyle, Wamac and Centralia had all been found and were practically exhausted. Bartelso, which was essentially the same type of field, started local operators on a new program and some outside interests entered the picture. The majors, led by Carter Oil Co. in the center and Pure Oil Co. in the east, began assembling blocks but nothing much happened until Adams Oil Co. brought in Patoka. This immediately set off the fireworks and the major play broke into two parts, the sand fields in the center and the McClosky fields in the east. The third sector was opened by minor activity in the old Allendale area, followed by a major discovery at Griffin.

It is particularly important to note that in all three subcycles the major fields found were among the first fields discovered. It is probable that the most intense activity would be in the area having the best chance and that these areas would provide the best results. Whatever the reasoning, the main part of the basin has yielded nothing better than Louden, Salem and Centralia; the McClosky area has not improved on Clay City, Noble and Dundas; and in the southeastern sector, Griffin and New Harmony are the major discoveries.

The Illinois play made many operators conscious of basins. Illinois was a basin, and it was remembered that Michigan was also a basin. The obvious move was to step over into the next basin. However, one element was lacking in the Forest City and Northeast Missouri play, the known reservoirs. A discovery would have proved the existence of these reservoirs, but it never came except in the extreme northwestern corner.

There have been many examples of the trigger discovery which started off major plays which added large reserves. Generally, these followed the normal procedure of finding the biggest fields early in the game and then settling down to a development of the area in search of more of the same kind. The salt-dome epoch, beginning with Spindletop, Jennings, and Humble; then the series of discoveries following development of the refraction seismograph and torsion balance; then a third following the reflection seismograph; then the Cockfield and Conroe trend play; the Frio-Vicksburg, and now the Wilcox trend play, have provided the Gulf Coast area with a series of exploration cycles and developed some 4,000,000,000 bbl. of new reserves. In each of these individual plays the largest fields were found early. If this had not been the case, the play might have died down.

West Texas presents the same picture with Big Lake attracting not too much attention, but when McCamey, McElroy, Yates, Hendricks and Chalk-Settles all came in in rapid succession it proved that Permian limestones could produce plenty of oil and the hunt was on. Like Big Lake, Hobbs provided comparatively little excitement. It was somehow different, but Eunice and Monument were of the well-known type and New Mexico became a major producer. Beginnings in Ector County were small but North Cowden started another cycle. Wasson, followed closely by Slaughter, turned attention to the north, but more fields of this size and type are not anticipated. Possibly the Lubbock County discovery will develop into another major play in a new reservoir for the section and the development of another major reserve.

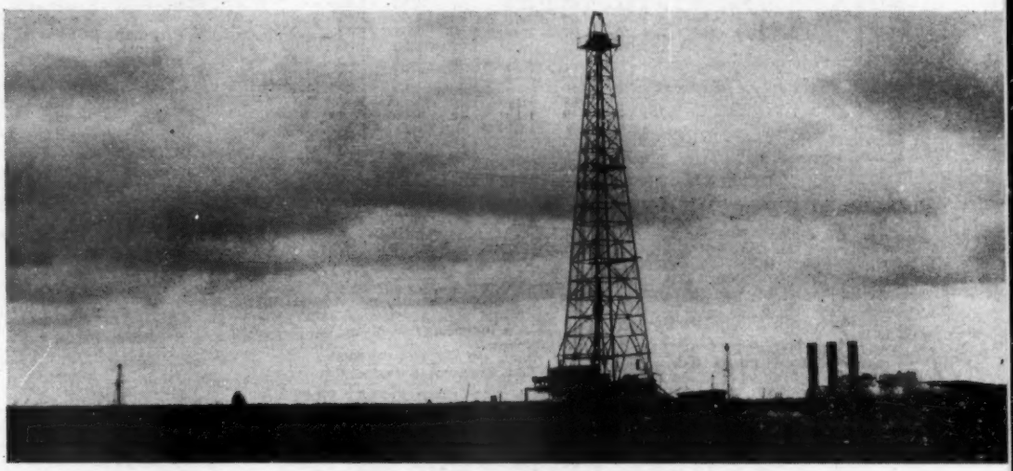
In the Los Angeles Basin there were many fields before Santa Fe Springs, Huntington Beach and Long Beach, but these three fields, which flooded the markets, started the ever-deepening program which has found repeated pays and has made the per-acre yield in this area the highest in the world. Wilmington provides an exception to the generalization that the largest fields are found early in a play.

Are Any Cycles Starting Now?

The arguments sketched briefly in this article indicate that the chances of finding fields of major importance in older areas is less than the chances of discovering them in new areas. In order to explore these new areas scientifically it is essential that we know that structural conditions are satisfactory and that there are reservoirs. Structures are easy to find but drilling structures without a known objective is costly and dangerous. There must be a first field in every area. Tinsley is too new for us to forget that, but the most spectacular successes in the past have come from combining known conditions in one or more sections and trying to find them in a nearby area.

The probability of finding new major fields appears to be best on the outskirts of present known areas. Areas in which major fields are by no means a remote possibility are in the Anadarko basin where Wilcox sand production has already been proved and which has major Wilcox fields nearby, the northern San Joaquin region where Raisin City and Helm have proved that the producing sands of the older areas do not stop at Coalinga and the area northeast of Slaughter in West Texas. Here the pay is not of major importance in West Texas and the possibilities for large production rest upon a combination of the Panhandle pay with the West Texas type of structure.

The Tensleep production of the Wertz, Lost Soldier and Mahoney areas of Wyoming appears to be of major importance and although not apparently in the 500,000,000-bbl. class, some 100,000,000-bbl. fields may develop. The western extension of the Kansas play does not at present promise fields of the class of Silica, Trapp and Bemis, but the Kearny County discovery in Pennsylvanian sands suggests the possibility of more Lance Creeks.



North La Ward field, Jackson County, Texas, in early stage of development

The area west of present production in West Texas has long been talked of but there has been little prospecting. The West Texas type of field seems to stop with North and South Ward, but there are two pays in the western area which do not extend into the main sector. These are the Silurian, which produces at Shipley, and the Delaware, which is found at Loving, Mason and Monroe and has recently been reported as productive in western Pecos County. These pays are not exciting today, but neither was the Ellenburger until production was found at scattered points all over Wichita County.

The record of development in areas which start with rank wildcats drilled far from known production is naturally very spotty. Most of the old producing areas of the country, Pennsylvania, Oklahoma, California, the Gulf Coast, Wyoming, and other states had seeps or other surface indications of petroleum to encourage the wildcatter. Other areas had no such encouraging signs. One of these, Mississippi, which is still practically a one-field section, had producing sands not far distant which provided a possible objective. That the pays in Tinsley do not closely correlate with those of Louisiana suggests that luck still plays some part in exploration.

West Texas is obviously another area in which drilling remote from production developed very large reserves in a pay which was not only unknown but almost unsuspected. Such an area may again be found but it stands to reason that wells drilled blindly in distant areas do not have nearly the same chances for success as those drilled nearer production where the same pays provide an objective. A play in the Dakotas, Florida, Washington, or Arizona may open up the major field that is needed to hold our reserves at a safe level but the probability of such a development is small.

CRUDE-OIL PRICES . . .

OKLAHOMA AND KANSAS GRAVITY TABLES

	1	2	3	4	5	6	7	8
Below 21	....	....	....	....	$.85	$.75	....	$.70
21-21.9	....	....	....	....	.87	.78	....	.73
22-22.9	....	....	....	....	.89	.81	....	.76
23-23.9	....	....	....	....	.91	.84	....	.79
24-24.9	....	....	....	....	.93	.87	....	.82
Below 25	$.93	....	....	$.86	....	....	....	....
25-25.9	.95	.95	....	.88	.95	.90	....	.85
26-26.9	.97	.97	....	.90	.97	.93	....	.88
27-27.9	.99	.99	....	.92	.99	.96	....	.91
28-28.9	1.01	1.01	1.01	.94	1.01	.99	....	.94
29-29.9	1.03	1.03	1.03	.96	1.03	1.02	....	.97
30-30.9	1.05	1.05	1.05	.98	1.05	1.05	$1.05	1.00
31-31.9	1.07	1.07	1.07	1.00	1.07	1.07	1.07	1.02
32-32.9	1.09	1.09	1.09	1.02	1.09	1.09	1.09	1.04
33-33.9	1.11	1.11	1.11	1.04	1.11	1.11	1.11	1.06
34-34.9	1.13	1.13	1.13	1.06	1.13	1.13	1.13	1.08
35-35.9	1.15	1.15	1.15	1.08	1.15	1.15	1.15	1.10
36-36.9	1.17	1.17	1.17	1.10	1.17	1.17	1.17	1.12
37-37.9	1.19	1.19	1.19	1.12	1.19	1.19	1.19	1.14
38-38.9	1.21	1.21	1.21	1.14	1.21	1.21	1.21	1.16
39-39.9	1.23	1.23	1.23	1.16	1.23	1.23	1.23	1.18
40 and above	1.25	1.25	1.25	1.18	1.25	1.25	1.25	1.20

OKLAHOMA AND KANSAS TABLE EXPLANATION

COLUMN (1) MID-CONTINENT GRADES:
Pure Oil Co., 5-20-41.
Gulf Oil Corp., 5-20-41.
Skelly Oil Co. (Kansas only), 5-19-41.
H. F. Wilcox Oil & Gas Co., 5-20-41.

COLUMN (2) MID-CONTINENT GRADES:
White Eagle Oil Purchasing Co., Inc., 5-19-41, Kansas only.
Sinclair Prairie Oil Marketing Co., 5-20-41.

COLUMN (3) MID-CONTINENT GRADES:
Continental Oil Co., 5-19-41.
Phillips Petroleum Co., 5-19-41.
Tide Water Associated Oil Co., 5-20-41.

COLUMN (4) JACKSON, TILLMAN COUNTIES:
Gulf Oil Corp., 5-20-41.

COLUMN (5) MID-CONTINENT GRADES:
Standard Oil Co., (Indiana), 5-20-41.
National Refining Co., 5-20-41.

COLUMN (6) MID-CONTINENT GRADES:
Magnolia Petroleum Co., 5-21-41.
Shell Oil Co., Inc., 5-19-41.

COLUMN (7) OKLAHOMA:
Champlin Refining Co., 5-20-41.

COLUMN (8) CARTER COUNTY, OKLAHOMA including Healdton, Oscar, Spring and Seay.
Shell Oil Co., Inc., 5-19-41.
Ben Franklin Refining Co., 5-20-41.

OKLAHOMA FLAT PRICE

Cumberland $1.14
Pure Oil Co., 9-4-41.

MIDDLE WEST FLAT PRICES

Illinois and Indiana

Ohio Oil Co.:
Illinois basin, 5-21-41 ..... $1.37
Eastern Illinois, 5-21-41 ..... 1.22
Western Indiana, 5-21-41 ..... 1.22

Magnolia Petroleum Co.:
Illinois basin, 5-21-41 ..... $1.37

Carter Oil Co.:
Illinois (Louden), 5-21-41 ..... $1.37
Sohio Corp.:
Illinois basin, 5-21-41 ..... $1.37
Texas Co.:
Illinois basin, 5-21-41 ..... $1.37
Gulf Refining Co.:
Illinois basin, 5-21-41 ..... $1.37

Michigan

Simrall Corp., 5-27-41:
Greendale, Porter, Vernon, Crystal, and Wise $1.44
Buckeye, Bentley, Edenville, Beaverton, and Monitor (sweet) 1.42
Freeman, Redding, Lincoln, and Winterfield 1.39
Hamilton-Grout 1.29
West Branch-Arenac 1.24
Sohio Corp., 5-1-41:
Bloomingdale-Columbia $1.38
Mid-West Refineries, Inc., 5-1-41:
Kent County $1.38
Pure Oil Co., 5-27-41:
Sherman $1.39
Midland (Midland County) $1.44

EASTERN STATES

Pennsylvania and Ohio

South Penn Oil Co.:
National lines, 8-23-41 ..... $2.75
Southwest Penn, 8-23-41 ..... 2.40
Eureka lines, 8-23-41 ..... 2.34
Corning grade, 5-27-41 ..... 1.31
Tide Water Associated Oil Co.:
Bradford, 8-23-41 ..... 2.75
Allegany, N. Y., 8-23-41 ..... 2.75
Pennzoil Co.:
Group A, 8-23-41 ..... 2.68
Group B, 8-23-41 ..... 2.67
Group C, 8-23-41 ..... 2.66
Group D, 8-23-41 ..... 2.65
Group E, 8-23-41 ..... 2.63
Quaker State Oil Refining Corp:
In Buckeye lines, 8-23-41 ..... 2.30
In Eureka lines, 8-23-41 ..... 2.34

West Virginia

Pure Oil Co.:
Cabin and Kelly Creek, 8-23-41 .. $2.34

LOUISIANA AND SOUTHERN ARKANSAS GRAVITY TABLE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Below 18	....	....	....	....	....	....	....	....	....	....	....	....	$.94	....	....	....	....	....
18-18.9	....	....	....	....	....	....	....	....	....	....	....	....	.96	....	....	....	....	....
19-19.9	....	....	....	....	....	....	....	....	....	....	....	....	.98	....	....	....	....	....
Below 20	....	....	....	....	....	....	....	$1.06	....	$.94	$.99	$.89	....	....	$1.06	....	....	....
20-20.9	....	....	....	....	....	....	....	1.08	....	.96	1.01	.91	1.00	....	1.08	....	....	....
Below 21	$.68	....	....	$.90	....	....	....	....	....	....	....	....	....	$.90	....	....	....	....
21-21.9	.70	....	....	.92	....	....	....	1.10	....	.98	1.03	.93	1.02	.92	1.10	....	....	....
22-22.9	.72	....	....	.94	....	....	....	1.12	....	1.00	1.05	.95	1.05	.94	1.12	....	....	....
23-23.9	.74	....	....	.96	....	....	....	1.14	....	1.02	1.07	.97	1.08	.96	1.14	....	....	....
24-24.9	.76	....	....	.98	....	....	....	1.16	....	1.04	1.09	.99	1.11	.98	1.16	....	....	....
Below 25	....	$.86	$.98	....	....	$.88	....	....	....	....	....	....	....	....	....	....	....	....
25-25.9	.78	.88	1.00	1.00	....	.90	....	1.18	....	1.06	1.11	1.01	1.14	1.00	1.18	....	....	....
26-26.9	.80	.90	1.02	1.02	....	.92	....	1.20	....	1.08	1.13	1.03	1.17	1.02	1.20	....	....	....
27-27.9	.82	.92	1.04	1.04	....	.94	....	1.22	....	1.10	1.15	1.05	1.19	1.04	1.22	....	....	....
28-28.9	.84	.94	1.06	1.06	....	.96	....	1.24	....	1.12	1.17	1.07	1.21	1.06	....	$1.14	$1.06	....
29-29.9	.86	.96	1.08	1.08	....	.98	....	1.26	....	1.14	1.19	1.09	1.23	1.08	....	1.16	1.08	....
30-30.9	.88	.98	1.10	1.10	$1.26	1.00	....	1.28	....	1.16	1.21	1.11	1.25	1.10	....	1.18	1.10	$1.05
31-31.9	.90	1.00	1.12	1.12	1.28	1.02	....	1.30	$1.07	1.18	1.23	1.13	1.27	1.12	....	1.20	1.12	1.07
32-32.9	.92	1.02	1.14	1.14	1.30	1.04	....	1.32	1.09	1.20	1.25	1.15	1.29	1.14	....	1.22	1.14	1.09
33-33.9	.94	1.04	1.16	1.16	1.32	1.06	....	1.34	1.11	1.22	1.27	1.17	1.31	1.16	....	1.24	1.16	1.11
34-34.9	.96	1.06	1.18	1.18	1.34	1.08	....	1.36	1.13	1.24	1.29	1.19	1.33	1.18	....	1.26	1.18	1.13
35-35.9	.98	1.08	1.20	1.20	1.36	1.10	....	....	1.15	....	....	....	....	1.20	....	1.28	1.20	1.15
Below 36	....	....	....	....	....	....	$1.07	....	....	....	....	....	....	....	....	....	....	....
36-36.9	1.00	1.10	1.22	1.22	....	1.12	1.09	....	1.17	....	....	....	....	1.22	....	1.30	1.22	1.17
37-37.9	1.02	1.12	1.24	1.24	....	1.14	1.11	....	1.19	....	....	....	....	....	....	....	....	1.19
38-38.9	1.04	1.14	1.26	1.26	....	1.16	1.13	....	1.21	....	....	....	....	....	....	....	....	1.21
39-39.9	1.06	1.16	1.28	1.28	....	1.18	1.15	....	1.23	....	....	....	....	....	....	....	....	1.23
40 & above	1.08	1.18	1.30	1.30	....	1.20	1.17	....	1.25	....	....	....	....	....	....	....	....	1.25

LOUISIANA AND SOUTHERN ARKANSAS TABLE EXPLANATION

Standard Oil Co. of Louisiana, 5-22-41.
COLUMN (1) applies to Atlanta, Buckner, Magnolia, Schuler (Jones sand), Village and Lewisville fields.
COLUMN (2) applies to De Soto, Sabine, Fouke, Homer, Miller County, Sugar Creek and Nebo.
COLUMN (3) applies to Bunkie, Eola, Olla and South Olla.
COLUMN (4) applies to Bayou Mallet, Choctaw, Darrow, Jeanerette, Lirette, North Crowley, South Crowley, Port Barre, Potash, Roanoke, St. Martinville and Port Allen.
COLUMN (5) applies to University (Baton Rouge).
COLUMN (6) applies to Cotton Valley crude, Rodessa and Shreveport (Cross Lake); also Anse La Butte, effective 8-1-41, starting at 80 cents for below 21°, also, to Caddo effective 10-15-41.
Continental Oil Co., 5-21-41.
COLUMN (7) applies to Abbeville, Louisiana.
Continental Oil Co., 5-21-41.
Stanolind Oil & Gas Co., 5-21-41.
COLUMN (8) applies to East and West Hackberry.
COLUMN (8) applies to Caddo Parish, effective 10-15-41.
COLUMN (9) applies to Evangeline, Acadia Parish.
Lion Oil Refining Co., 5-22-41.
COLUMN (1) applies to Reynolds lime, Jones sand, Schuler, Ark.
COLUMN (2) applies to El Dorado, West and South Rainbow fields, Snow Hill and Schuler-Morgan sand.
Placid Oil Co., 5-22-41.
COLUMN (3) applies to Olla.
COLUMN (2) applies to Nebo field.
Shell Oil Co., Inc., 5-20-41.
COLUMN (10) applies to Roanoke, Chalkley.
COLUMN (11) applies to Iowa, Black Bayou, White Castle.
COLUMN (12) applies to Gibson, South Houma, Hester, West Lake Verret.
Magnolia Petroleum Co., 5-21-41.
COLUMN (13) applies to Lockport, Cameron Meadows, and West Gueydan, La.
COLUMN (6) applies to Haynesville, Cotton Valley, Rodessa, La., and Miller County, Arkansas.
Phillips Petroleum Co., 3-29-41.
COLUMN (1), Schuler (Jones sand), except schedule starts at 76 cents for below 25° gravity.
Gulf Refining Co., 5-21-41.
COLUMN (5), Jennings.
COLUMN (8), Edgerly, Starks, Vinton, East Hackberry, Cameron Meadows, Leesville.
COLUMN (16) applies to Grand Bay, Quarantine Bay, Timbalier Bay and West Bay, except schedule starts at $1.12 for below 28° gravity.
COLUMN (6) applies to Caddo, Homer, Bull Bayou, Crichton, De Soto, Haynesville and El Dorado.
Pure Oil Co. 4-22-41.
COLUMN (14) applies to Gueydan crude.
COLUMN (6), Caddo, Homer, Haynesville, Bull Bayou, Crichton, De Soto, and El Dorado.
Texas Co., 5-21-41.
COLUMN (6) applies to North Louisiana.
COLUMNS (15) and (16), Bay St. Elaine, Caillou Island, Iberia, Lake Barre, Lake Pelto, Leesville, Port Barre. (Schedules A and B).
COLUMN (17), Bateman Lake, Dog Lake, Fausse Point, Horseshoe Bayou, Jefferson Island, Plumb Bob, Vermilion Bay, West Cote Blanche and Delta Duck Club.
COLUMN (18), Delta Farm, Lake Salvador, Golden Meadow.

LOUISIANA AND ARKANSAS FLAT PRICES

Continental Oil Co., 5-21-41:
Tepetate and Lake Arthur $1.18
Ville Platte 1.20
Gulf Refining Co., 5-21-41:
Smackover (Ark.) $0.83
Lion Oil Refining Co., 5-22-41:
Smackover (heavy) $0.83
Dorcheat 1.15
Phillips Petroleum Co., 5-22-41:
Smackover (heavy) $0.83
Placid Oil Co., 5-22-41:
Tullos-Urania (5-21-41) ..... $1.1!
Cotton Valley dist. (above 60°) .. 1.3!
Cotton Valley (Holloway sand) 1.25
Cotton Valley (Bodcaw-D sands) 1.20
Pure Oil Co.:
Bosco (5-21-41) $1.14
Sweet Lake (5-22-41) 1.06
Creole (5-22-41) 1.16
Republic Oil Co., 6-2-41:
Nevada County, Arkansas $0.80
Shell Oil Co., Inc., 5-20-41:
Happytown $1.15
Standard Oil Co. of Louisiana, 5-22-41:
Big Creek, Dorcheat, McKamie (sour) $1.15
Smackover (heavy) ..... .83
Cotton Valley distillate (9-1-41) 1.40
Cotton Valley (Holloway sand) .. 1.25
Lisbon distillate 1.20
Republic Oil Refining Co., 5-21-41:
Bayou Pigeon $1.20
Texas Co., 5-21-41:
Erath $1.21
Garden Island 1.36
Lafitte, Paradis 1.19
Lake Mongoulois 1.36

ROCKY MOUNTAIN GRAVITY TABLE

Below 29 ..... $0.96
29-29.9 ..... .98
30-30.9 ..... 1.00
31-31.9 ..... 1.02
32-32.9 ..... 1.04
33-33.9 ..... 1.06
34-34.9 ..... 1.08
35-35.9 ..... 1.10
36-36.9 ..... 1.12
37-37.9 ..... 1.14
38-38.9 ..... 1.16
39-39.9 ..... 1.18
40 and above 1.20

Stanolind Oil & Gas Co., 5-20-41, includes Dutton Creek, Midway and Salt Creek except Tensleep crude, Wyoming.
Sinclair Wyoming Oil Co., 5-20-41, includes Salt Creek and Lost Soldier, except Tensleep crude, Wyoming.
Continental Oil Co., 5-21-41, includes Fort Collins and Wellington, Colorado.

Wyoming

Ohio Oil Co.:
Rock River (5-20-41) $1.15
Lance Creek (7-1-41) 1.12
Elk Basin and Grass Creek (light) 1.00
Stanolind Oil & Gas Co., 5-20-41:
Frannie (light) ..... .70
Frannie (heavy) ..... .47
Grass Creek (light) 1.00
Grass Creek (heavy) ..... .50
Hamilton Dome ..... .45
Elk Basin 1.00
Salt Creek (Tensleep) ..... .6785
Continental Oil Co.:
Big Muddy (5-30-41) $1.08
Lance Creek (9-1-41) 1.12

TEXAS GULF COAST GRAVITY TABLES

	(1)	(2)	(3)	(4)	(5)
Below 20	$1.06	$1.06	....	$.98	$.93
20-20.9	1.08	1.08	....	1.00	.95
Below 21	....	....	$1.08	....	....
21-21.9	1.10	1.10	1.10	1.02	.97
22-22.9	1.12	1.12	1.12	1.04	.99
23-23.9	1.14	1.14	1.14	1.06	1.01
24-24.9	1.16	1.16	1.16	1.08	1.03
25-25.9	1.18	1.18	1.18	1.10	1.05
26-26.9	1.20	1.20	1.20	1.12	1.07
27-27.9	1.22	1.22	1.22	1.14	1.09
28-28.9	1.24	1.24	1.24	1.16	1.11
29-29.9	1.26	1.26	1.26	1.18	1.13
30-30.9	1.28	1.28	1.28	1.20	1.15
31-31.9	1.30	1.30	1.30	1.22	1.17
32-32.9	1.32	1.32	1.32	1.24	1.19
33-33.9	1.34	1.34	1.34	1.26	1.21
34-34.9	1.36	1.36	1.36	1.28	1.23
35-35.9	1.38	....	1.38	1.30	1.25
36-36.9	1.40	....	1.40	1.32	1.27
37-37.9	1.42	....	1.42	1.34	1.29
38-38.9	1.44	....	1.44	1.36	1.31
39-39.9	1.46	....	1.46	1.38	1.33
40 and above	1.48	....	1.48	1.40	1.35

TEXAS GULF COAST GRAVITY TABLE EXPLANATION

COLUMN (1):
Humble Oil & Refining Co., 5-21-41, includes Amelia, Clear Lake, Goose Creek, Hastings, Magnet, Mykawa (new), Raccoon Bend, South Thompsons, Sugarland, Thompsons, and Webster fields.
Stanolind Oil & Gas Co., 5-21-41, includes West Beaumont, High Island and Spindletop.
Sinclair Prairie Oil Marketing Co., 5-21-41.
Stanolind Oil Purchasing Co., 4-1-41, includes Clinton where schedule starts at 98 cents for below 21°, regular thereafter.
Pure Oil Co., 4-21-41, includes Louise and Ganado.
Gulf Refining Co., 5-21-41, includes Spindletop, Sour Lake, Lovells Lake, West Beaumont, Goose Creek, South Liberty, Big Creek, Blue Ridge, Fannett, Moore, Barbers Hill, Hankamer, Thompson, Lochridge, Dyersdale, and Hull (old).
Sun Oil Co., 5-21-41, includes Barbers Hill, Batson (old), Bayou Blue, Chacahoula, Cotton Lake, Esperson (below 35° gravity), Fausse Pointe, Goose Creek, Greens Lake, Hackberry (east and west), Hull (below 25°), Humble (below 35°), Nome, North Dayton (below 25°), Orange, Saratoga, Sour Lake, South Liberty and Vinton.
COLUMN (2):
Texas Co., 5-21-41, includes Arriola, Ganado, Hamman, Hillje, Humble, Kubela, Magnet, Manvel, Markham, Mauritz, Old Ocean, Pickett Ridge, Port Neches, Sour Lake, West Columbia, and Withers.
COLUMN (3):
Pan American Production Co., 5-21-41, includes Hastings and South Houston.
Stanolind Oil & Gas Co., 4-1-41, in-

cludes High Island, Spindletop, Hastings, and South Houston.

COLUMN (4):

Humble Oil & Refining Co., 5-21-41, includes Anahuac, Angleton, Cedar Point, Fishers' Reef, Hull (new and old), Pierce Junction, Red Fish Reef, and Turtle Bay.

Gulf Refining Co., 5-21-41, includes Anahuac, Hull (new), Thompson (deep), Pierce Junction, and Orange.

Sun Oil Co., 5-21-41, includes Anahuac, Caplen and Turtle Bay.

Humble Oil & Refining Co., 3-29-41, includes Dickinson, Gillock, Hardin, League City, and Rowan.

COLUMN (5):

Pan American Production Co., 5-21-41, includes Gillock, except scale starts at 95 cents below 21°.

Stanolind Oil Purchasing Co., 5-21-41, includes Fairbanks, North Houston, and Rosyln.

SOUTH TEXAS AND SOUTHWEST TEXAS GRAVITY TABLES

	1	2	3	4	5	6	7
Below 20	$1.03	$1.08	$1.08	$.89	$1.03	$1.03	$1.08
20-20.9	1.05	1.10	1.10	.90	1.05	1.05	1.10
21-21.9	1.07	1.12	1.12	.91	1.07	1.07	1.12
22-22.9	1.09	1.14	1.14	.92	1.09	1.09	1.14
23-23.9	1.11	1.16	1.16	.93	1.11	1.11	1.16
24-24.9	1.13	1.18	1.18	.94	1.13	1.13	1.18
25-25.9	1.15	1.20	1.20	.95	1.15	1.15	1.20
26-26.9	1.17	1.22	1.22	.96	1.17	1.17	1.22
27-27.9	1.19	1.24	1.24	.97	....	1.19	1.24
28-28.9	1.21	1.26	1.26	.98	....	1.21	1.26
29-29.9	1.23	1.28	....	.99	....	....	1.28
30-30.9	1.25	1.30	....	1.00	....	....	1.30
31-31.9	1.27	1.32	....	1.01	....	....	1.32
32-32.9	1.29	1.34	....	1.02	....	....	1.34
33-33.9	1.31	1.36	....	1.03	....	....	1.36
34-34.9	1.33	1.38	....	1.04	....	....	1.38
35-35.9	1.35	1.40	....	1.05	....	....	1.40
36-36.9	1.37	1.42	....	1.06	....	....	....
37-37.9	1.39	1.44	....	1.07	....	....	....
38-38.9	1.41	1.46	....	1.08	....	....	....
39-39.9	1.43	1.48	....	1.09	....	....	....
40 and above	1.45	1.50	....	1.10	....	....	....

SOUTH AND SOUTHWEST TEXAS TABLE EXPLANATION

COLUMN (1) MIRANDO:

Humble Oil & Refining Co., 5-21-41, includes Blanchard, Bridwell, Colorado, Comitas, Eagle Hill, Escobas, Fitzsimmons, Glen, Government Wells (North and South), Heyser, Hoffman, Kelsey, Kohler, Loma Novia, Lundell, Manila, Mirando Valley, Placedo, Randado, Sarnosa, and Tesoro.

Magnolia Petroleum Co., 5-21-41.

Continental Oil Co., 7-1-41. Includes Hoffman, Government Wells (North and South), Lopez, Moco, Colmena, Seven Sisters, South Seven Sisters, Loma Novia, Conoco Driscoll, O'Hern, Piedre Lumbre, and Taranchauas.

Amsco Pipe Line Co., 5-21-41, includes Adami and Munson.

Republic Oil Refining Co., 5-21-41, includes Heyser field crude.

COLUMN (2) REFUGIO:

Continental Oil Co., 7-1-41, includes Minnie Bock, Clara Driscoll, South Clara Driscoll, Driscoll Ranch, Orange Grove, and Wade City.

Humble Oil & Refining Co., 5-21-41, includes East White Point, Greta, Melon Creek, O'Connor-McFaddin, Plymouth, Saxet, Taft, and Tom O'Connor.

Amsco Pipe Line Co., 5-21-41, includes Plymouth, Taft, and East White Point.

COLUMN (3) REFUGIO:

Texas Co., 5-21-41, includes Greta, Saxet, and Taft.

COLUMN (4) LA ROSA:

Amsco Pipe Line Co., 3-29-41.

COLUMN (5) DUVAL-MIRANDO:

Sun Oil Co., 5-21-41.

COLUMN (6) DUVAL-MIRANDO:

Texas Co., 5-21-41.

COLUMN (7) NUECES COUNTY:

Amsco Pipe Line Co., 5-21-41.

Republic Oil Refining Co., 5-21-41.

WEST TEXAS, PANHANDLE AND NEW MEXICO TABLE EXPLANATION

COLUMN (1):

Humble Oil & Refining Co., 5-21-41, includes Andrews, Crane, Crockett, Ector, Gaines, Glasscock, Howard, Reagan, Upton, Winkler, and Yoakum counties, West Texas, and Lea County, New Mexico.

Gulf Refining Co., 5-21-41, includes Crane, Ector, Upton, Ward, and Winkler counties, West Texas.

COLUMN (2):

Sinclair Prairie Oil Marketing Co., 5-21-41, includes West Texas and Lea County, New Mexico. Effective 5-29-41 in Eddy County, New Mexico.

Magnolia Petroleum Co., 5-21-41, includes Upton, Howard, Glasscock, Mitchell, Winkler, Cochran, Hockley, Yoakum and Gaines counties.

COLUMN (3):

Texas Co., 5-21-41, includes Crane and Winkler counties, Texas, and Lea County, New Mexico.

COLUMN (4) TEXAS PANHANDLE:

Magnolia Petroleum Co., 7-9-41.

Continental Oil Co., 7-9-41.

Phillips Petroleum Co., 7-9-41.

COLUMN (5) WINKLER AND LEA:

Stanolind Oil & Gas Co., 5-21-41, includes Winkler County only.

Gulf Refining Co., 5-21-41, includes Lea County, New Mexico, only.

COLUMN (6) GRAY COUNTY:

Texas Co., 5-21-41.

H. F. Wilcox Oil & Gas Co. (7-9-41).

COLUMN (7) LEA COUNTY:

Magnolia Petroleum Co., 5-21-41.

COLUMN (8) EDDY COUNTY:

Continental Oil Co., 5-30-41.

COLUMN (9):

Shell Oil Co., Inc., 5-20-41, includes Crane, Ector, Howard, Glasscock, Upton, Winkler, and Yoakum counties, Texas, and Lea County, New Mexico.

COLUMN (10) TEXAS PANHANDLE:

Humble Oil & Refining Co., 7-9-41.

COLUMN (11) PANHANDLE:

Sinclair Prairie Oil Marketing Co., 5-23-41.

WEST TEXAS, PANHANDLE, AND NEW MEXICO GRAVITY TABLES

	1	2	3	4	5	6	7	8	9	10	11
Below 20	$0.70	....	....	....	....	....	....	....	$0.70	$.73	....
20-20.9	.72	....	....	....	....	....	....	....	.72	.75	....
21-21.9	.74	....	....	....	....	....	....	....	.74	.77	....
22-22.9	.76	....	....	....	....	....	....	....	.76	.79	....
23-23.9	.78	....	$0.78	....	....	....	....	....	.78	.81	....
24-24.9	.80	....	.80	....	....	....	....	....	.80	.83	....
Below 25	....	$0.80	....	....	....	....	....	$0.80	....	....	$0.83
25-25.9	.82	.82	.82	....	$0.82	....	....	.82	....	.82	.85	.85
26-26.9	.84	.84	.84	....	.84	....	....	.84	....	.84	.87	.87
27-27.7	.86	.86	.86	....	.86	....	....	.86	....	.86	.89	.89
28-28.9	.88	.88	.88	$0.91	.88	....	....	.88	$0.88	.88	.91	.91
29-29.9	.90	.90	.90	.93	.90	....	....	.90	.90	.90	.93	.93
30-30.9	.92	.92	.92	.95	.92	....	....	.92	.92	.92	.95	.95
31-31.9	.94	.94	.94	.97	.94	....	....	.94	.94	.94	.97	.97
32-32.9	.96	.96	.96	.99	.96	....	....	.96	.96	.96	.99	.99
33-33.9	.98	.98	.98	1.01	.98	....	....	.98	.98	.98	1.01	1.01
34-34.9	1.00	1.00	1.00	1.03	1.00	$1.03	1.00	1.00	1.00	1.03	1.03	1.03
35-35.9	1.02	1.02	1.02	1.05	1.02	1.05	1.02	1.02	1.02	1.05	1.05	1.05
36-36.9	1.04	1.04	1.04	1.07	1.04	1.07	1.04	1.04	1.04	1.07	1.07	1.07
37-37.9	1.06	1.06	....	1.09	1.06	1.09	....	1.06	....	1.09	1.09	1.09
38-38.9	1.08	1.08	....	1.11	1.08	1.11	....	1.08	....	1.11	1.11	1.11
39-39.9	1.10	1.10	....	1.13	1.10	1.13	....	1.10	....	1.13	1.13	1.13
40 and above	1.12	1.12	....	1.15	1.12	1.15	....	1.12	....	1.15	1.15	1.15

NORTH TEXAS, WEST CENTRAL TEXAS, EAST CENTRAL TEXAS GRAVITY TABLES

	1	2	3	4	5	6	7	8
Below 20	....	....	....	....	$.80	....	....	....
20-20.9	....	....	....	....	.82	....	....	....
Below 21	....	....	....	....	....	$.78	....	....
21-21.9	....	....	....	....	.84	.80	....	....
22-22.9	....	....	....	....	.86	.82	....	....
23-23.9	....	....	....	....	.88	.84	....	....
24-24.9	....	....	....	....	.90	.86	....	....
Below 25	....	....	....	$.88	....	....	$0.86	$0.95
25-25.9	$.88	....	.90	$.97	.92	.88	.88	.97
26-26.9	.90	....	.92	.99	....	.90	.90	.99
27-27.9	.92	....	.94	1.01	....	.92	.92	1.01
28-28.9	.94	$.94	.96	1.03	....	.94	.94	1.03
29-29.9	.96	.96	.98	1.05	....	.96	.96	1.05
30-30.9	.98	.98	1.00	1.07	....	.98	.98	1.07
31-31.9	1.00	1.00	1.02	1.09	....	1.00	1.00	1.09
32-32.9	1.02	1.02	1.04	1.11	....	1.02	1.02	1.11
33-33.9	1.04	1.04	1.06	1.13	....	1.04	1.04	1.13
34-34.9	1.06	1.06	1.08	1.15	....	1.06	1.06	1.15
35-35.9	1.08	1.08	1.10	1.17	....	1.08	1.08	1.17
36-36.9	1.10	1.10	1.12	1.19	....	1.10	1.10	1.19
37-37.9	1.12	1.12	1.14	1.21	....	1.12	1.12	1.21
38-38.9	1.14	1.14	1.16	1.23	....	1.14	1.14	1.23
39-39.9	1.16	1.16	1.18	1.25	....	1.16	1.16	1.25
40 and above	1.18	1.18	1.20	1.27	....	1.18	1.18	1.27

NORTH TEXAS, WEST CENTRAL TEXAS, EAST CENTRAL TEXAS TABLE EXPLANATION

COLUMN (1) WEST CENTRAL AND NORTH:

Humble Oil & Refining Co., 5-21-41, includes Brown, Callahan, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, and Throckmorton counties.

Panhandle Refining Co., 5-21-41, in Leuders area.

Gulf Refining Co., 5-21-41.

Sinclair Prairie Oil Marketing Co., 11-11-41.

COLUMN (2) NORTH TEXAS:

Continental Oil Co., 11-11-41.

Magnolia Petroleum Co., 11-11-41.

Panhandle Refining Co., 11-12-41.

Bell Oil & Gas Co., 11-11-41.

Texas Co., 11-12-41.

COLUMN (3) EAST CENTRAL:

Magnolia Petroleum Co., 5-21-41, includes Cass, Panola, and Rodessa (Texas and Louisiana), and Miller County, Arkansas.

Gulf Refining Co., 5-21-41, includes Rodessa, Texas.

COLUMN (4) EAST CENTRAL:

Humble Oil & Refining Co., 5-21-41, includes Anderson, Cherokee, Limestone, and Navarro counties and the Navarro Crossing field.

COLUMN (5) EAST CENTRAL:

Humble Oil & Refining Co., 5-21-41, includes Hawkins field.

COLUMN (6) NORTH TEXAS:

Stanolind Oil Purchasing Co., 11-11-41.

COLUMN (7) FISHER COUNTY:

Shell Oil Co., Inc., 5-20-41.

COLUMN (8) MEXIA:

Sinclair Prairie Oil Marketing Co., 5-30-41.

TEXAS FLAT-PRICE FIELDS

Agua Dulce (light), Benavides, Longhorn, Southland, and Sweden, 5-21-41 ..... $1.35

(Continued on Page 111)

STANDARD OIL CO. OF CALIFORNIA

CRUDE-OIL PRICES EFFECTIVE MAY 23, 1941

(All gravities above those quoted take highest price offered in that field)

Gravity	Signal Hill (Long Beach)	Wilmington	(El Segundo)	Seal Beach	Huntington Beach	Inglewood	Playa Del Rey	Olinda-Brea Canyon	Athens-Rosecrans	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Greeley, Canal, Wasco	Coles Levee	Mountain View	Elk Hills, Buena Vista Hills, Midway-Sunset, Lakeview area	Lost Hills	Coalinga	Wheeler Ridge	Kettleman Hills	Elwood Terrace
14-14.9	....	$.68	....	....	$.71	....	....	$.70	....	$.70	$.70	$.70	$.72	....	....	....	....	....	$.73	$.73	$.73	....	....	....
15-15.9	....	.71	....	....	.75	$.76	....	.72	....	.72	.71	.72	.72	....	....	....	....	....	.73	.73	.73	....	....	....
16-16.9	....	.74	$.79	....	.79	.79	....	.75	....	.74	.73	.75	.72	....	....	....	....	....	.73	.75	.73	....	....	....
17-17.9	....	.78	.82	....	.82	.82	....	.78	....	.77	.76	.78	.72	....	....	....	....	....	.75	.78	.73	....	....	....
18-18.9	$.80	.82	.86	....	.86	.85	....	.81	....	.80	.79	.82	.74	....	....	....	....	....	.78	.81	.73	....	....	....
19-19.9	.84	.86	.90	....	.89	.88	....	.85	....	.83	.82	.85	.77	....	....	....	....	$.73	.81	.84	.75	....	....	....
20-20.9	.88	.90	.94	....	.93	.92	$.80	.88	....	.86	.85	.89	.80	....	....	....	....	.76	.85	.87	.77	....	....	....
21-21.9	.92	.94	.98	....	.96	.95	.84	.91	....	.89	.89	.92	.84	....	....	....	....	.79	.90	.90	.80	....	....	....
22-22.9	.96	.98	1.02	$.88	.99	.98	.87	.95	....	.93	.93	.96	.87	....	....	....	....	.83	.94	.93	.83	$.76	....	....
23-23.9	1.00	1.02	1.05	.92	1.02	1.01	....	.98	....	.97	.98	1.00	.91	....	....	....	....	.87	.99	.96	.86	.80	....	....
24-24.9	1.03	1.06	1.07	.97	1.05	1.04	f.o.b.	1.01	....	1.01	1.02	1.03	.94	$.99	....	....	....	.90	1.03	.99	.89	.83	....	....
25-25.9	1.07	1.09	1.10	1.01	1.08	1.07	our	1.04	....	1.05	1.06	1.07	.98	1.02	....	....	....	.94	1.07	1.01	.92	....	....	....
26-26.9	1.11	1.12	1.12	1.06	1.11	1.10	pipe	1.08	....	1.09	1.10	1.11	1.01	1.06	....	....	....	.97	1.11	1.04	.95	....	....	....
27-27.9	1.15	1.15	1.15	1.10	1.14	1.14	line	1.11	....	1.13	....	1.15	1.05	1.10	$1.04	....	....	1.01	1.15	1.07	.98	....	....	....
28-28.9	1.18	1.18	1.18	1.15	1.17	1.17	....	1.14	....	1.17	....	....	1.08	1.13	1.08	....	....	1.04	1.19	1.10	1.00	....	....	....
29-29.9	1.20	1.21	....	1.19	1.20	1.20	....	....	$1.17	....	....	....	1.12	1.17	1.12	....	....	1.07	1.24	1.13	1.02	....	....	....
30-30.9	1.23	1.24	....	....	1.23	1.22	....	....	1.21	....	....	....	1.15	1.21	1.15	$1.01	$1.09	1.10	1.28	1.16	1.04	....	....	f.o.b.
31-31.9	....	....	....	....	....	1.24	....	....	1.25	....	....	....	1.19	1.24	1.19	1.04	1.12	1.14	....	....	1.06	....	....	ship
32-32.9	....	....	....	....	....	....	....	....	1.29	....	....	....	1.23	1.28	1.23	1.07	1.14	1.17	....	....	1.09	....	....	....
33-33.9	....	....	....	....	....	....	....	....	1.32	....	....	....	1.27	....	1.26	1.10	1.17	....	....	....	1.11	....	....	$1.22
34-34.9	....	....	....	....	....	....	....	....	1.36	....	....	....	1.31	....	1.30	1.13	1.20	....	....	....	1.13	....	....	1.25
35-35.9	....	....	....	....	....	....	....	....	....	....	....	....	1.35	....	....	1.16	1.22	....	....	....	....	....	$1.23	1.28
36-36.9	....	....	....	....	....	....	....	....	....	....	....	....	1.39	....	....	1.19	1.25	....	....	....	....	....	1.26	....
37-37.9	....	....	....	....	....	....	....	....	....	....	....	....	1.43	....	....	1.22	....	....	....	....	....	....	1.29	....
38-38.9	....	....	....	....	....	....	....	....	....	....	....	....	1.47	....	....	1.25	....	....	....	....	....	....	....	....
39-39.9	....	....	....	....	....	....	....	....	....	....	....	....	1.51	....	....	....	....	....	....	....	....	....	....	....
40-40.9	....	....	....	....	....	....	....	....	....	....	....	....	1.53	....	....	....	....	....	....	....	....	....	....	....

Standard posts 73 cents for all grades at Newhall, Kern River, Kern Front, McKittrick and Round Mountain.

Personal Paragraphs

JOE F. MILLER, who succeeded D. E. BEACH as superintendent of Pure Transportation Co., Michigan division, has been transferred to the Oklahoma division. CHARLEY L. BERNARD succeeds Mr. Miller at Mount Pleasant, Mich.

GEORGE COX, who has spent 34 years in the production department of Continental Oil Co., recently retired, and he and Mrs. Cox are now living in Santa Ana, Calif. Mr. Cox joined the Continental organization in 1907, at Florence, Colo., as rig builder and tool dresser. He was made production foreman at Salt Creek, Wyo., in 1924, and received several promotions there before his transfer as district foreman of the Rocky Mountain division in 1939.

DICK SCHWAB, independent operator of Houston, Tex., is moving his offices to Illinois where he will continue to operate as an independent.

S. F. PETERSON, Aurora, Ill., has been appointed petroleum engineer for the new Illinois Division of Oil and Gas Conservation. His appointment was approved by the Illinois Geological Survey.

DALE NIX has taken a position with the N. V. Nederlandsche Pacific Petroleum Mij., Medan, Sumatra. He was formerly with California Arabian Standard Oil Co., San Francisco, Calif.

A. W. TWEELINGS has been transferred from gravity-meter helper with Stanolind Oil & Gas Co., in Minneapolis, Minn., to apprentice engineer in the company's production department at Midwest, Wyo.

TY. DAVISON and J. H. CABLE, petroleum engineers of Corpus Christi, Tex., delivered a paper on repressuring of the Loma Novia field, Duval County, Texas, at a special meeting of the South Texas Geological Society at Corpus Christi, Tex., the past week.

FRED B. HOWLAND, general manager, Kewanee Oil Co., Titusville, Pa., told the Titusville Rotary Club last week that the only way to stimulate production of Pennsylvania Grade crude oil is to raise the price. Mr. Howland has been general manager of Kewanee since 1905, when he succeeded his father on the latter's death.

A. VOORHIES, JR., associate director of the Esso Laboratories of the Standard Oil Co. of Louisiana, discussed the sulfuric acid alkylation process at the Fort Worth-Dallas section of the American Chemical Society meeting Wednesday.

C. A. LUPTON, Fort Worth, Tex., has announced that he has acquired the stock of the Owens-Snebold Corp. of Fort Worth. The company, formed by TOM B. OWENS and W. F. SNEBOLD, owns 29 producers and approximately 1,000 acres in the Ivy pool of northwestern Shackelford County, Texas.

GEORGE D. PUTNAM, Lario Oil and Gas Co., was named president of the Kansas Geological Society at a meeting last week in Wichita. Other officers elected were W. C. IMBT, Stanolind Oil & Gas Co., vice president; Z. STUCKY, Cities Service Oil Co., secretary-treasurer, and JACK COPASS, Amerada Petroleum Corp., new director.

C. G. McLAREN, Shell Oil Co., Inc., has been elected president of the Purchasing Agents Association of Tulsa. Other officers are: J. H. WOLFE, British American Oil Producing Co., first vice president; R. R. BURRIS, Sun Oil Co., second vice president; R. M. McMAHAN, Bovaird Supply Co., secretary-treasurer; J. S. HAWLEY, Stanolind Oil & Gas Co., and retiring president, national director.

Seven Carter Oil Co. employes at Tulsa have been assigned to foreign service. They are FRANKLIN L. LAWRENCE, to be seismograph operator with the Standard Oil Co. of Venezuela at Caripito; DEAN A. DILLON and MARLE F. MYERS, to go with Lago Petroleum Corp. at Maracaibo and Aruba; NELSON M. KENNEDY, WILLIAM A. SORGE and LAWRENCE M. DENTON, who will join the International Petroleum Corp. in Ecuador, and RICHARD N. JOLLY, with the N.K.P.M. in the Netherlands East Indies.

C. A. DILLARD, production superintendent for Carter Oil Co., at St. Elmo, Ill., has been transferred to Plaquemine, La.

SAM C. SCHEUBER has been transferred by Amerada Petroleum Corp. from Monument, N. M., to Seminole, Tex.

JOHN P. HAMMOND, formerly with Mid-Union Drilling Co., Wichita Falls, Tex., has become associated with Amerada Petroleum Co., Paradis, La.

WALTER BITTERLING has gone to New York and will sail for Venezuela, where he will be associated with a new pipe line being built in the eastern area of the South American country.

C. M. LARSON, chief consulting engineer, Sinclair Refining Corp., addressed the Wichita, Kans., chapter of the American Chemical Society last week on "Simplifying Fuels and Lubricants for Mechanized Fighting Forces."

HARRY L. EDWARDS, president of the Harry L. Edwards Drilling Co., and vice president of the American Association of Oilwell Drilling Contractors, will address the Petroleum Engineers' Club of Texas A. & M. College, December 11.

MILTON W. LEWIS, independent consulting geologist of Los Angeles, Calif., has left for Houston and Dallas, Tex., where he will undertake geological work for Bradford Lewis of California, who will enter the Lone Star State if conditions warrant and Mr. Lewis makes a satisfactory recommendation with respect to the advisability of wildcat exploration.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

W. P. Donovan, of the gasoline department of the Gypsy Oil Co., and chairman of the committee recently appointed to organize a national association of casinghead-gas producers, says that by the beginning of the spring the production of natural gasoline in the Mid-Continent field will exceed the gasoline production of the refineries.

Capt. J. T. Jones, noted for many years as an oil operator in the eastern fields, died at the Homeopathic Hospital, Buffalo, N. Y., December 6.

Secretary Lane, of the Department of the Interior, has recommended to President Wilson the withdrawal for oil purposes of 45,000 acres of government land in Colorado and 86,000 acres, including a part of the Green River district, in Utah.

20 YEARS AGO

At the Boulder, Colo., field office of the Bureau of Mines, the cooperative oil-shale laboratory has been enlarged and much new equipment has been added. Additions to the staff include Douglas A. Fell, a native of New South Wales.

A subsidiary concern to operate in Bolivia has been organized by the Standard Oil Co. of New Jersey.

Curiosity has been expressed in some quarters as to the possible effect of the naval holiday proposed by Secretary Hughes upon the consumption of fuel oil.

10 YEARS AGO

The time has come when the oil industry and the state and federal governments should get together to take an inventory of the oil business and decide upon such measures as may be deemed necessary to prevent a recurrence of depressed conditions of the past year.

Oil pools in Southwest Texas are to be officially named by a committee of the San Antonio section of the American Association of Petroleum Geologists. A committee has been named by Pres. Herschel H. Cooper to consist of Phil F. Martyn, Joseph M. Dawson and Olin G. Bell.

J. H. MOORE, Texas scout for the Humble Oil & Refining Co., has left Midland, Tex., for New Orleans, La., where he has been transferred.

G. W. MEADOWS, president of the Stanolind Club, Tulsa, was chairman of an ice-skating party enjoyed by 400 members and guests of the club at the Tulsa Coliseum last week.

PHILLIP TABER, drilling contractor, Tulsa, was in a Tulsa hospital last week undergoing treatment for an eye injury suffered in a hunting accident. A stray shot apparently has damaged the eyeball, though not entering it.

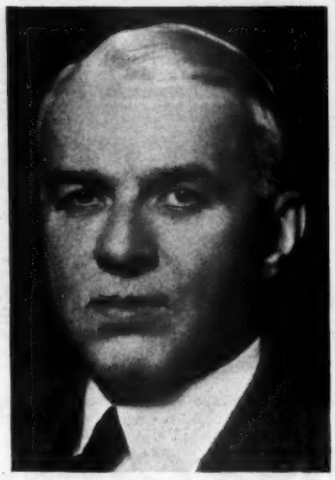
J. W. NEWTON, vice president in charge of refining, Magnolia Petroleum Co., and chairman of the refining committee of Region 3, Office of Petroleum Coordinator, presided at the joint meeting of the refining and marketing committees for that region at Beaumont last week.

JACK L. SCHILLINGER, General Petroleum Corp., Los Angeles, Calif., and GEORGE F. PRUSSING, consulting engineer, Oil Industry Committee on National Defense for the Western United States, were guest speakers at the annual meeting of the American Right-of-Way Association, Los Angeles, Chapter 1.

C. C. BROWN, independent oil operator of Ponca City, Okla., is to be appointed assistant director of marketing for District 2 of the Office of Petroleum Coordinator for National Defense, with headquarters in Chicago. In his new work Mr. Brown, who was formerly state tax commissioner in Oklahoma, will assist WIRT FRANKLIN, senior district director of OPC District 2 in charge of production.

Assumes New Duties

One of the newly elected vice presidents of Standard Oil Co. of California, who last month became treasurer in addition to his other duties, is a veteran of 38 years' connection with the concern. He is J. H. Tuttle, who lives in Lafayette, San Francisco, Calif., with his wife, Marian.



J. H. TUTTLE

Mr. Tuttle joined the company as a young man in 1903 when he became a clerk in refining work. Throughout the years he has advanced steadily and has held many positions. His work, however, has been predominantly in the auditing and accounting departments and his training thus makes him exceptionally well fitted for the duties of treasurer.

First executive post given to Mr. Tuttle was that of assistant general auditor in 1918. In 1920 he was advanced to general auditor and in 1922 he became the company's secretary. Four years later, in 1926, he was appointed secretary and comptroller.

For the past 11 years he has been a member of the board of directors, having been elected to that position in December 1930 when a vacancy was created by the death of one of the former members. Then, in August of this year, the board of directors met to fill the vacancy left when H. D. Collier was elected president to succeed the late W. H. Berg, who died June 26, 1941. Mr. Tuttle was chosen for the post and a few months later added the duties of treasurer to his other work.

BARNEY E. HORRIGAN, JR., scout clerk with Sinclair-Wyoming Oil Co., has been transferred from Tyler, Tex., to Mattoon, Ill.

ARTHUR L. JENKE has left Pure Oil Co. at Noble, Ill., and has joined the U. S. Geological Survey as topographical engineer at Marlboro, Mass.

CHARLES T. CONRAD has been made assistant district engineer for Ohio Oil Co., Shreveport, La. He was formerly with United Gas Pipe Line Co., at Shreveport.

SAM FURMAN, who went to Mount Pleasant, Mich., from Ohio Oil Co.'s Los Angeles division as general production superintendent, has returned to California.

JIM KENDALL, independent oil man of Oklahoma, has let it be known that he will be a candidate for secretary of state of Oklahoma in the political election of 1942.

L. W. SPITZNAGLE, formerly in the Oklahoma City, Okla., office of Tide Water Associated Oil Co., is now assistant sales manager in Tulsa for the southwestern division, under H. E. PERKINS, manager.

W. J. HILSEWECK, geologist, Gulf Oil Corp., addressed the Fort Worth (Tex.) Geological Society at their meeting on Monday at the Worth Hotel. His subject was the Walnut Bend pool of northeastern Cooke County.

EARL B. GILMORE, president of Gilmore Oil Co., Los Angeles, Calif., was reelected president of the Hollywood Park Turf Club a few days ago. A. T. JERGINS, another California independent oil operator, was elected a member of the board of directors.

GUSTAV EGLOFF, Universal Oil Products Co., Chicago, addressed the Louisville, Ky., section of the American Chemical Society on "Oil and War." On the same day he addressed the faculty and students of University of Louisville on "Motor Fuels for Modern Airplanes." Later he addressed the University of Kentucky and the American Chemical Society in New York City.

R. T. McNALLY, superintendent of the production division of Shell Oil Co., Inc., with headquarters in Pampa, Tex., has been elected chairman of the Panhandle chapter, American Petroleum Institute. A. J. BEAGLE, of the Rock Glycerin Co., Pampa, was installed as first vice chairman, and NORMAN PERKINS, Phillips Petroleum Co., Borger, Tex., second vice chairman.

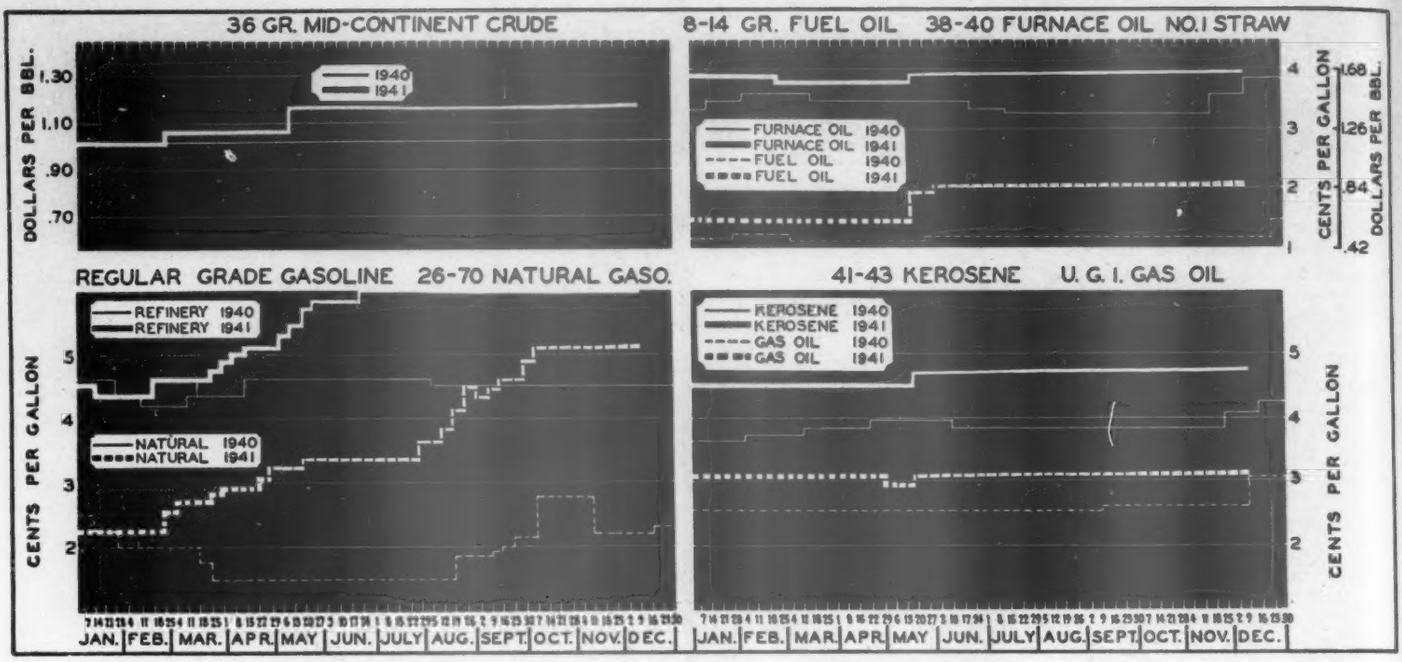
O. C. NONWEILER, chief engineer, was elected a director of the Oklahoma Pipe Line Co., Tulsa, at the annual stockholders' meeting last week. PAUL GRIFFIN, BRUCE RAMSEY, W. R. FINNEY and H. P. HELLINGHAUSEN were reelected to the board. Mr. Nonweiler came to Oklahoma Pipe Line a few months ago from the Louark Producing Co., Shreveport, La., following the Louisiana company's merger with Carter Oil Co. The new board of directors subsequently reelected Mr. Griffin president. Mr. Ramsey was reelected vice president; Mr. Hellinghausen was reelected secretary and elected treasurer, which latter post was formerly held by Mr. Griffin; L. A. McSTRAVICK, not a member of the board, was elected assistant secretary and assistant treasurer.

CHARLES H. KUNZE, Brooklyn, N. Y., has been appointed manager of the marine-transportation department of Socony-Vacuum Oil Co., Inc., taking the place of WALTER E. SIMPSON, who has completed 40 years of service with the company and has retired as of December 1. Mr. Kunze has been with Socony-Vacuum for 38 years, becoming assistant manager in March 1940.

Comprising the new board of directors of the Bradford Oil Refining Co., Bradford, Pa., are THOMAS D. MALLORY, F. D. KORNER, STERNS MARSHALL, E. E. SLINGERLAND and JOHN VON CARLOWITZ. Stockholders voted to reduce the board from 13 to 5 members. After adjournment of the stockholders' meeting, the new board held an organization meeting and elected the following officers: Mr. Von Carlowitz, president; Mr. Korner, vice president, and Mr. Mallory, secretary-treasurer.

THOMAS R. WEYMOUTH, who retired as vice president of Columbia Gas & Electric Corp., of New York City, last April after 38 years in the natural-gas business, and who is the 1941 recipient of the Charles A. Munro award, has been appointed consultant on natural gas by the Office of the Petroleum Coordinator for National Defense. He will be attached to the natural-gas and natural-gasoline section.

Shifts: W. M. GREENWELL, superintendent, Southern Carbon Co., from Monroe, La., to Fairbanks, La.; W. M. WALCOTT, engineer, Sohio Pipe Line Co., from Centralia, Ill., to Salem, Ill.; JOE McMAHON, geologist, Benedum-Trees Oil Co., from Decatur, Ill., to Fairmount, Pa.; R. L. WALES, engineer, Texas Co., from Parkersburg, W. Va., to Carbondale, Ill.; SAM W. HOGAN, engineer, Transwestern Oil Co., from Hutchinson, Kans., to San Antonio, Tex.; H. N. K. BROOKINGS, geologist, Phillips Petroleum Co., from Bismarck, N. D., to Oklahoma City, Okla.; ROBERT ARMITAGE, drilling superintendent, Mid-Union Drilling Co., from Shawnee, Okla., to Pampa, Tex.; F. C. HASTENT, engineer, Phillips Petroleum Co., from Seminole, Okla., to Eureka, Kans.; E. H. CLINGMAN, superintendent, Fain Drilling Co., from Taft., Tex., to Refugio, Tex.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Low-Octane Gasoline Given Price Stability by Aviation-Fuel Need

By H. STANLEY NORMAN

PREFERENTIAL use of low-octane base stock for future production of nonmilitary-aviation fuels, recommended by the Office of Petroleum Coordinator last week, plus the apparent shortages of tetraethyl lead, is apt to minimize the elements in the market that normally act as price depressants during the season of slack consumption. Earmarking of a greater proportion of the motor-fuel stocks and future production for aviation gasoline will have the result of diminishing the quantity of gasoline available for production of automotive fuel.

Indications are abundant that the general quality of motor fuel will be reduced until plants for the production of military aviation gasoline are sufficient to meet the projected requirements. Opening of hostilities with Japan this week will convert the aviation-gasoline program from the position of desirability to that of prime necessity. There is little doubt that the Government will take whatever action is necessary to insure the supply of aviation gasoline.

Quality Factor Diminished

Events of the past few weeks, but more particularly the opening of warfare in the Pacific, have all pointed to a diminishment in the quality of civilian gasoline. The situation indicates that low-octane gasoline which normally is the weakest link in the motor-fuel market will be supported by an insatiable demand over the next several months and perhaps for duration of the war.

Demand for motor fuel from civilian commercial accounts is closing the year at a strong pace. The tendency of consumption to slacken in the early part of November, a result of the heavy and continued rains in October, has been reversed during recent weeks. Customers in the Middle West are ordering quantities of motor fuel from Mid-Continent refineries exceeding all previous similar periods by a substantial amount. Indications are that most of the current demand is for prompt consumption. Distributors and jobbers in areas surrounding defense projects are particularly heavy purchasers and they are insisting on reasonably short-term deliveries.

Fuel oils are relatively inactive, although a slight dip in the average temperature prevailing in the Great Lakes district has prompted a few inquiries for kerosene and No. 2 burning oil during the week. Kerosene is slightly soft in quotations from North Texas but a majority of refiners are registering disinterest in all current inquiries which involve a price concession.

Refined Oil Market Barometer

Heavier emphasis placed on aviation-motor fuel by the outbreak of war in the Pacific indicates that the transition to lower-octane automotive gasoline will be hastened. Exigencies of making larger quantities of airplane fuel available indicate that lower-quality gasoline will receive an indirect price stimulant. Light-fuel-oil prices on the Gulf Coast have strengthened and plants there are sold up for 45 to 60 days.

MID-CONTINENT: Heavy purchases of gasoline continue to feature trading.

GULF COAST: Several cargoes of light fuel sold on lend-lease contracts.

CALIFORNIA: Residual fuel strong. Gasoline and kerosene inactive and prices are soft.

PENNSYLVANIA: Demand brisk for all grades of motor fuel and neutral oils.

CHICAGO: Colder weather has stimulated inquiries for fuel oils. Sales reflect more activity.

Intermediate and residual fuels are moving in routine fashion from Mid-Continent refineries but demand and trading in these products is more active around Chicago, Minneapolis, St. Paul, Indianapolis, and other industrial centers.

Despite the lack of intensive efforts to buy certain products in the Mid-Continent refinery market, the price structure is firm and at least a few materials would command higher quotations if it were not for the attitude of the OPA.

War Exigencies May Alter Prices

Here again, developments in the Pacific war may exert inestimable influence on the petroleum industry. If the need for expanded refining facilities is of sufficient urgency, the petroleum industry may use the exigencies of hasty construction as an additional and, perhaps, as an even more effective argument for higher product prices as a means of accomplishing the objectives of a wartime economy.

Lubricating-oil stocks suitable for use in aviation engines particularly, but including other types of material as well, are tight. Substantial volumes of lubricating oils have been purchased in recent weeks by the Navy for lend-lease assignment and buying for American military requirements has been on an accelerated scale. Lubricating-oil manufacturers in the Mid-Continent have been prevented from offering to new customers for an extended period because of the heavier calls made from outlets of long standing and also because of the demands made by the Government.

Natural-gasoline prices and demand continue unchanged from recent standards. Production in Group 3 territory is about in balance with demand from nearby refineries and for northern movement.

Eastern Burning-Oil Prices Depressed by Mild Weather

By J. P. O'DONNELL

NEW YORK, Dec. 8.—The East Coast market has continued to withstand the effects of unseasonable weather. Prices, on the whole, remain unchanged. However, the abnormally low demand for fuel oil has resulted in definite market weaknesses that may develop generally lower prices unless the protracted spell of mild weather is terminated. Reports of price shading have been current for the better part of 3 weeks and an increasing propotion of sales is being made at current lower quotations.

The introduction of two new factors last week may tend to accelerate the tendency toward lower prices. These were the reduction in tanker rates put into effect December 1 by the Maritime Commission and the order from the Office of Price Administration that reductions in prices would not be accomplished by lower ceilings. New tanker rates which went into effect last Monday were 40 cents per barrel for gasoline, 42.4 cents for kerosene and 45.6 cents for No. 2 heating oil. These reductions averaged approximately ¼ cent per gallon. The greater part of oil delivered from the gulf to the East Coast is transported in company-owned tankers which will not be affected by the order but a sufficient volume is transported in chartered tankers to affect the market if companies operating on this basis would decide to pass on the reduction. The tanker situation is still sufficiently tight to eliminate single-trip charters and virtually all available bottoms are under long-term charter.

Leon Henderson's statement that prices may be reduced from present levels to meet competition and subsequently raised to levels not above those in effect November 7 is also likely to have a softening effect on the market. There was a distinct tendency to maintain prices in the belief that if they were reduced it would be difficult if not impossible to raise them later. Since this fear has been disposed of by the OPA recommendation, it will no longer act as a factor imparting strength to the market. At the same time Mr. Henderson's office announced that it would not offer objection to certain "justified price increases." It outlined the procedure to follow when the proposed increases are based on advancing costs of production, transportation, labor, materials, marketing or otherwise.

This procedure may be followed in the case of Bunker C fuel oil on the East Coast. While stocks of light fuel oil and gasoline have been maintained at high levels, those of residual fuel oil are comparatively tight. An advance from the current low of $1.35 to $1.50 per barrel has reportedly been requested in order to stimulate production. On the other hand, while stocks are generally regarded as low, they are apparently sufficient. Price is probably as accurate an index as there is and it has been tending downward for some time. While they are reported to be on a limited basis, a number of bunker-oil sales at $1.35 per barrel have been cited whereas if a really tight situation prevailed spot sales would be made at higher prices.

There was also some evidence of weakness in gasoline prices with minor tank-car and tank-wagon reductions being in effect at several isolated points along the Atlantic Coast. Tank-car prices were unchanged in the New York Harbor area as both wholesale and retail structures were maintained. Weakness in motor fuel is laid to the increasing stocks despite the sustained high level of demand. Stocks increased steadily through November and are now more than 2,000,000 bbl. higher than they were a year ago. This relationship will probably be maintained through the winter since it is believed that the rate of refinery operations will be kept high to supply the heavy demand that is expected next summer. Under the circumstances, it would not be surprising if stocks on the East Coast totaled more than 24,000,000 bbl. on March 31, 1942, fully 10 per cent greater than on that date this year.

Oil-burner sales, an important factor in estimating demand for heating oil, have increased as a result of the removal of the threat of an oil shortage, according to a report of the Oil Burner Institute, and also as a result of the lifting of the restrictions on installations. These restrictions, as they affected East Coast defense-housing areas, were lifted November 15. However, their removal does not promise a return to normal production rates for the industry. It is expected that manufacturers of heating equipment, including coal and gas as well as oil burners, will be required to restrict 1942 production to about 70 per cent of the 1940 rate as the result of material allocations that will affect all industry.

Exception to the ceiling on asphalt roofing products has been taken by the Asphalt Roofing Industry Bureau and an appeal for reconsideration will be made. According to J. S. Bryant, managing director, raw materials represent 75 per cent of the manufacturing cost. These, he said, have risen in some instances as much as 60 per cent this year while, on the average, they have risen fully 20 per cent. This rise in materials costs will constitute the basis for the plea for reconsideration of the price-limiting order.

Seventeen more tankers were returned to Western Hemisphere service during November, with an additional three vessels being returned during the first week in December. This has increased the total to 25 with approximately 40 yet remaining in the British shuttle service. Return of these boats and the prospective return of as many more were chiefly responsible for the reduction in coastwise tanker rates.

Heavy Buying Cleans Coastal Market of Diesel Fuel Oils

HOUSTON, Tex., Dec. 8.—Lend-lease purchases the past week have practically cleaned up the Gulf Coast market of diesel gas oils for the remainder of the year and the first part of January. These products, along with gasolines which for some time have been sold up through the year, now enjoy a position of scarcity, leaving No. 2 fuel the only product that is particularly long.

Latest lend-lease awards for diesel gas oils approximated 592,000 bbl. with prices ranging from $1.68 per barrel (4 cents per gallon) to $1.78½ per barrel (4.25 cents per gallon). In addition another purchase of 100,000 bbl. of a special straightrun gas oil was made at $1.89 per barrel or 4.5 cents per gallon.

It was reported that some No. 2 fuel was offered as low as 3⅞ cents but there was no confirmation that sales were made, and apparently the market remains at 4 cents.

A number of inquiries for gasoline from buyers other than the U. S. Navy for lend-lease also were reported but there is no gasoline available for these. Inquiries lacked definite confirmation.

Kerosene continues scarce. Residual fuels still are in good shape although orders could be filled if received. Bunkering is bringing 85 cents with cargo lots being quoted from 85 to 92½ cents.

So far there has been no reaction in Gulf Coast markets to the war situation.

A.P.I. Weekly Refinery Statistics

Week Ended December 6, 1941

	Capacity reporting (per cent)	Total gasoline stocks (bbl.)	Residual fuel-oil stocks (bbl.)	Gas oil and distillate stocks (bbl.)	Daily crude runs (bbl.)
East Coast	100.0	19,421,000	12,151,000	21,906,000	633,000
Appalachian	83.8	3,472,000	415,000	626,000	134,000
Ind., Ill., and Ky.	84.4	15,539,000	4,400,000	5,499,000	608,000
Okla., Kans., and Mo.	80.7	7,945,000	2,124,000	1,913,000	245,000
Inland Texas	63.2	2,395,000	1,269,000	457,000	124,000
Texas Gulf	91.0	12,206,000	8,006,000	6,969,000	1,024,000
Louisiana Gulf	95.3	2,857,000	2,331,000	1,617,000	149,000
N. Louisiana and Ark.	49.9	486,000	343,000	324,000	53,000
Rocky Mountains	50.1	1,144,000	337,000	140,000	37,000
California	90.9	15,516,000	62,791,000	12,895,000	553,000
Total reported	86.5	80,981,000	94,167,000	52,346,000	3,560,000
Est. unreported	.....	5,375,000	1,175,000	1,600,000	385,000
*Est. total	.....	†86,356,000	95,342,000	53,946,000	3,945,000
*Est. total previous wk.	.....	85,525,000	95,971,000	54,141,000	4,115,000
*Dec. 7, 1940	.....	80,306,000	104,094,000	46,030,000	3,460,000

*Bureau of Mines. †Includes 7,293,000 bbl. aviation gasoline.

Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATES)

Week ended November 29, 1941	242,884,000 barrels
Week ended November 22, 1941	241,956,000 barrels
Week ended November 30, 1940	262,679,000 barrels

Figures do not include stocks of heavy, unrefinable California crude.

RETAIL OIL MARKETS...

Tank-wagon and filling-station prices on gasoline and kerosene furnished by larger marketing firms

Prices as of December 9, 1941

Taxes

The gasoline quotations given in the following tables include the 1½-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Gasoline Dlr.	Gasoline Inc. tax	Kero. tank wag.
Chicago, Ill.	16.1	14.1	4.5	10.3
Decatur	15.4	13.4	4.5	9.5
Joliet	16.4	14.1	4.5	10.3
Peoria	16.2	14.2	4.5	10.1
Quincy	13.4	12.4	4.5	10.0
Davenport, Ia.	16.2	14.7	4.5	10.1
Des Moines	15.9	11.9	4.5	9.8
Mason City	16.2	14.7	4.5	10.1
Duluth, Minn.	17.7	16.2	5.5	10.6
Mankato	17.4	15.9	5.5	10.3
Minneapolis	17.4	15.9	5.5	10.3
La Crosse, Wis.	17.4	15.9	5.5	10.3
Green Bay	17.7	16.2	5.5	10.6
Milwaukee	17.6	16.1	5.5	10.5
Detroit, Mich.	15.9	14.4	4.5	9.6
Grand Rapids	15.9	13.8	4.5	9.6
Saginaw	15.9	14.4	4.5	9.6
Evansville, Ind.	16.9	15.4	5.5	9.6
Indianapolis	17.1	15.2	5.5	9.8
South Bend	17.5	16.0	5.5	10.2
Fargo, N. D.	18.4	16.9	5.5	11.3
Huron, S. D.	17.8	16.3	5.5	10.7
Kansas City, Mo.*	14.9	13.4	4.5	9.4
St. Louis*	13.4	11.9	4.5	9.8
St. Joseph	15.7	14.2	4.5	9.6
Wichita, Kans.	14.8	12.7	4.5	8.0

*State tax 2 cents, 1-cent city tax, and 1½-cent federal tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers. On purchases per month off tank-wagon prices: 1,000 gal. or more, 1.5 cents off, minimum delivery 25 gal.

Stanolex Fuel Oil in Chicago

Effective Sept. 18, 1941, f.o.b. Chicago, tank-wagon prices: Standard heater oil, 1-99 gal., 9.0 cents; 100-149 gal., 8.0 cents; 150 gal. and over, 7.5 cents. Stanolex fuel oil No. 1, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7.5 cents; 400 gal. and over, 7.0 cents. Stanolex furnace oil, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7.5 cents; 400 gal. and over 7.0 cents: Stanolex fuel oil A, 1-99 gal., 8.0 cents; 100-399 gal., 7.0 cents; 400-749 gal., 6.0 cents; 750 gal. and over, 5.25 cents. Stanolex fuel oil B, 1-99 gal., 8.0 cents; 100-399 gal., 7.0 cents; 400-749 gal., 6.0 cents; 750 gal. and over 5.25 cents. Stanolex Bunker C fuel oil, 1-399 gal., 6.5 cents; 400-999 gal., 5.5 cents; 1,000 gal. and over, 4.5 cents.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Cons'r tank wag.	Gasoline Di-vided dlr.	Gasoline Inc. tax	Kero. tank wag.
Ohio points	16.0	15.0	5.5	*9.0

*Includes state tax of 1 cent.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline Cons'r tank wag.	Gasoline Net dlr.	Gasoline Inc. tax	Kero. tank wag.
Atlanta, Ga.	18.50	18.50	7.5	10.0
Augusta	18.50	18.50	7.5	9.5
Macon	18.50	18.50	7.5	10.0
Savannah	17.50	17.50	7.5	9.0
Birmingham, Ala.	19.00	19.00	8.5	9.0
Mobile	19.00	19.00	9.5	8.5
Montgomery	20.00	20.00	9.5	10.0
Jackson, Miss.	18.00	18.00	7.5	9.0
Vicksburg	17.50	17.50	7.5	8.5
Jacksonville, Fla.	18.50	18.50	8.5	8.0
Miami	18.50	18.50	9.5	8.0
Pensacola	19.00	19.00	9.5	8.0
Tampa	18.50	18.50	8.5	8.0
Lexington, Ky.	17.50	17.50	6.5	9.0
Covington	16.50	16.50	6.5	9.0
Louisville	17.00	17.00	6.5	8.5
Paducah	15.50	15.50	6.5	8.5

Price basis to tank-wagon consumers, effective January 4, 1937, 3 cents per gallon below tank-wagon price.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax, and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent. All are included in the table.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Cons'r tank wag.	Gasoline Dlr. tank wag.	Gasoline Inc. tax	Kero. tank wag.
Atlantic City	13.5	14.0	4.5	7.9
Newark	13.5	14.0	4.5	7.9
Annapolis	14.85	15.35	5.5	9.7
Baltimore	14.25	14.75	5.5	8.7
Cumberland	15.65	16.15	5.5	10.2
Washington, D. C.	12.50	13.00	3.5	9.2
Danville, Va.	16.95	17.45	6.5	10.45
Norfolk	15.75	16.25	6.5	10.2
Petersburg	16.05	16.55	6.5	11.2
Richmond	16.05	16.55	6.5	11.2
Roanoke	17.25	17.75	6.5	10.7
Charles'n, W. Va.	17.55	18.05	6.5	11.5
Parkersburg	16.85	17.35	6.5	11.5
Wheeling	16.85	17.35	6.5	11.8
Charlotte, N. C.	18.40	18.90	7.5	9.5
Hickory	18.95	19.45	7.5	10.5
Mount Airy	18.80	19.30	7.0	9.7
Raleigh	18.15	18.65	7.0	10.5
Salisbury	18.45	18.95	7.5	10.9
Charleston, S. C.	17.25	17.75	7.5	(*)
Columbia	18.10	18.60	7.5	(*)
Spartanburg	18.80	19.30	7.5	(*)

Price basis to Essolene undivided dealers: Dealer tank-wagon price less 0.5 cent per gallon. Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at a time by hose connections, on yearly purchases: From 2,500 to 100,000 gal., consumer tank-wagon price at time and place of delivery: 100,000 gal. per year, consumer tank-car price plus 0.5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less 0.5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gal. or more, consumer tank-wagon price. Single deliveries of less than 50 gal., 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less 0.5 cent per gallon. The above policy also applies in South Carolina, effective January 23, 1939.

*Kerosene business of the company at these points now exclusively handled by dealers.

Pennsylvania and Delaware

ATLANTIC REFINING CO.

	Gasoline Cons'r tank wag.	Gasoline Dlr. tank wag.	Gasoline Inc. tax	Kero. tank wag.
Philadelphia, Pa.	14.0	15.0	5.5	10.15
Pittsburgh	14.5	15.5	5.5	10.5
Allentown	14.5	15.5	5.5	10.5
Erie	14.5	15.5	5.5	10.5
Scranton	14.5	15.5	5.5	10.5
Altoona	14.5	15.5	5.5	10.5
Dover, Del.	...	15.5	5.5	10.5
Wilmington	...	15.0	5.5	10.0

Price basis to undivided dealers, dealer tank-wagon price less 0.5 cent per gallon.

Discount on kerosene, 2 cents per gallon off tank-wagon price on tank-wagon deliveries of 25 gal. or more at one time.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank truck* wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank wag.
San Francisco	14.5	18.5	4.5	11.5
Los Angeles	14.0	18.0	4.5	10.0
Fresno, Calif.	15.5	19.5	4.5	12.5
Phoenix, Ariz.	18.5	22.5	6.5	12.5
Reno, Nev.	17.5	21.5	5.5	13.5
Portland, Ore.	17.0	21.0	6.5	13.5
Seattle, Wash.	17.0	21.0	6.5	13.5
Spokane	19.0	23.0	6.5	16.5
Tacoma	17.0	21.0	6.5	13.5

*Posted net tank-truck prices (including tax).

Resale and commercial discounts, effective October 1, 1941: Tank-car deliveries 0.25 cent a gallon off posted net tank truck. Commercial: Retail deliveries, and/or tank-truck deliveries of less than 40 gal., 4 cents per gallon above posted net tank-truck price for Standard Aviation, Standard's Supreme, and Standard Gasoline, and 3 cents per gallon above posted net tank truck for Flight Gasoline, except single deliveries of less than 40 gal. to marine trade only, which are billed at posted net tank-truck price.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Gasoline Inc. tax	Kero. tank wag.
Denver, Colo.	14.5	5.5	11.0
Grand Junction	18.0	5.5	12.5
Pueblo	14.5	5.5	9.5
Casper, Wyo.	17.0	5.5	12.0
Cheyenne	16.0	5.5	11.5
Billings, Mont.	18.0	6.5	12.5
Butte	17.0	6.5	13.5
Great Falls	17.0	6.5	12.5
Helena	17.0	6.5	13.0
Salt Lake, Utah	18.5	6.5	14.5
Boise, Idaho	†20.1	6.5	16.5
Twin Falls	†21.1	6.5	17.0
Albuquerque, N. M.	*17.5	7.0	10.0
Roswell	*15.5	7.0	8.5
Santa Fe	‡18.0	7.5	10.0

*Includes city tax of 0.5 cent. †Includes toll-bridge tax of 1 mill. ‡Includes city tax of 1 cent.

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Gasoline Incl. tax	Kero. tank wag.
Texarkana, Ark.	14.0	5.5	6.0
Fort Smith	15.5	7.0	6.5
Little Rock	17.25	8.0	8.0
Muskogee, Okla.	15.0	7.0	8.0
Oklahoma City	15.0	7.0	8.0
Tulsa	15.0	7.0	8.0

Tank wagon represents price to consumers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Cons'r tank wag.	Gasoline Dlr. tank wag.	Gasoline Incl. tax	Kero. tank wag.
New Orleans, La.	17.25	17.75	8.5	‡10.5
Baton Rouge	17.25	17.50	8.5	‡10.5
Alexandria	17.25	17.50	8.5	‡10.5
Lafayette	17.50	18.00	8.5	‡10.0
Lake Charles	17.50	18.00	8.5	‡12.0
Shreveport	17.00	17.0	8.5	‡9.0
Knoxville, Tenn.	20.00	20.50	8.5	12.5
Memphis	17.25	17.75	8.5	10.5
Chattanooga	19.00	19.5	8.5	11.0
Nashville	19.00	19.5	8.5	10.0
Bristol	18.25	18.75	8.5	12.0

Esso at dealer price less 0.5 cent per gallon to undivided dealers.

‡Includes 1-cent state tax.

Price basis to commercial consumers throughout Louisiana, Arkansas, and Tennessee: On single deliveries of 50 gal. or more at a time — posted consumer tank-wagon price. On single deliveries of less than 50 gal. at a time—posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price is the same as the posted dealer tank-wagon price, less 0.5 cent per gallon.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline Comm. tank wag.	Gasoline Dlr.* tank wag.	Gasoline Inc. tax	Kero. tank wag.
Albany	14.2	14.7	5.5	7.7
Met. New York	14.4	14.9	5.5	8.0
Buffalo	14.5	15.0	5.5	8.3
Rochester	15.1	15.6	5.5	8.8
Syracuse	14.8	15.3	5.5	8.7
Portland, Me.	14.6	15.1	5.5	8.1
Manchester, N. H.	15.6	16.1	5.5	9.0
Burlington, Vt.	15.2	15.7	5.5	8.3
Boston, Mass.	13.2	13.7	4.5	8.0
Worcester	13.8	14.3	4.5	8.1
Hartford, Conn.	13.9	14.4	4.5	7.6
New Haven	13.3	13.8	4.5	6.9
Providence, R. I.	13.3	13.8	4.5	7.8

*Undivided.

Effective August 8, 1940, the company changed its commercial consumer policy in New York and New England to the following:

Full compartment deliveries: Accounts buying less than 20,000 gal. annually, 0.5 cent above the commercial-consuming price; accounts buying from 20,000 to 120,000 gal. annually, commercial-consumer price; accounts buying 120,000 gal. annually and above, 0.25 cent off consumer price. Split compartment deliveries: Delivery of less than a full compartment, 250 gal., commercial-consumer price plus 1 cent. Steel-barrel deliveries: Commercial price plus 3 cents.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Gasoline Dlr.	Gasoline Inc. tax	Kero. tank wag.
Omaha	17.9	15.4	6.5	9.8
McCook	18.5	15.9	6.5	9.5
Norfolk	18.4	16.9	6.5	10.3
North Platte	17.5	16.4	6.5	10.7
Scottsbluff	18.9	16.0	6.5	9.5

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

Texas

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Incl. tax	Kero. tank wag.
Dallas, Tex.	14.0	17.0	5.5	7.0
Fort Worth	14.0	17.0	5.5	7.0
Houston	14.0	18.0	5.5	8.0
San Antonio	14.0	18.0	5.5	7.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank wagon*
Oleum spirits	16.2
V.M.&P. naphtha	16.5
Cleaners' naphtha	15.5
Stanisol	15.5

*Prices include 3-cent Illinois tax but not 1-cent federal tax nor 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gal. lots if covered by contract.

Canada*

3-Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Gasoline Tank wag.	Gasoline Incl. tax	Kero. tank wag.
Halifax, N. S.	29.5	13.0	19.0
St. John, N. B.	29.5	13.0	19.0
Montreal, Que.	28.0	11.0	17.5
Toronto, Ont.	28.5	11.0	18.0
Hamilton, Ont.	28.5	11.0	18.0
Winnipeg, Man.	30.5	10.0	22.5
Brandon, Man.	31.0	10.0	23.0
Regina, Sask.	28.0	10.0	20.0
Saskatoon, Sask.	30.8	10.0	22.8
Edmonton, Alta.	28.9	10.0	20.9
Calgary, Alta.	26.0	10.0	18.0
Vancouver, B. C.	25.0	10.0	24.0

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon prices. Discount to undivided dealers 1 cent below tank-wagon price. In Maritime Provinces both divided and undivided dealers pay tank-wagon price.

Tank-Wagon Changes

Standard Oil Co. (Indiana) advanced the dealer tank-wagon price of gasoline 0.5 cent per gallon at Peoria, Ill., effective November 28.

AVERAGE DAILY PRODUCTION

LEADING OKLAHOMA FIELDS

	Dec. 6	Nov. 29
Allen	4,000	4,050
Billings	6,275	6,250
Burbank	8,400	8,425
South Burbank	7,650	7,675
Balance Osage	17,850	18,050
Bristow-Slick	6,350	6,300
Cement	13,800	13,750
East Cromwell	5,050	4,875
Cumberland	9,300	9,000
Cushing-Shamrock	8,900	8,850
Fitts	10,000	9,850
Healdton	8,400	8,300
Hewitt	13,750	13,900
Lucien	5,375	5,400
Northeastern counties	17,200	17,050
Oklahoma City	80,000	87,550
Ramsey	4,650	4,550
Seminole district:		
Bowlegs	5,500	5,525
Carr City	2,100	2,075
Dora	1,075	1,150
Earlsboro	3,375	3,425
East Earlsboro	1,600	1,575
South Earlsboro	675	600
Little River	5,975	6,075
East Little River	650	625
Mission	1,150	1,175
Seminole	6,000	6,050
East Seminole	775	800
Searight	1,700	1,725
Total Seminole	30,575	30,800
St. Louis-Pearson	15,750	16,100
Tatums-Tussy	5,050	5,075
Yale-Jennings	3,300	3,325
Total Oklahoma	418,250	425,250

PRICES OF REFINED PRODUCTS...

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of December 9, 1941
(Most prices in cents per gallon)

The quotations are exclusice of the federal excise taxes of 1.5 cents a gallon on gasoline and 4.5 cents a gallon on lubricating oils. Octane ratings in Middle West, Mid-Continent, and Southwest are based on A.S.T.M. method of testing.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.06	.0625
63-66 octane	.05625	.05875
60 octane and below	.0525	.055
60-62 400 grades:		
72-74 octane (regular)	.06	.0625
63-66 octane	.05625	.05875
60 octane and below	.0525	.055

NORTH TEXAS—

U. S. Motor grades:		
72-74 octane (regular)	.05875	.06125
63-66 octane	.0550	.06
60 octane and below	.05125	.05375
60-62 400	.05	.06

NORTH LOUISIANA (Ark. and N. La. delivery)—

U. S. Motor grades:		
72-74 octane (regular)	.05875	.06125
63-66 octane	.0550	.05875
60 octane and below	.05	.06

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:		
72-74 octane (regular)	.05875	.06125
60 octane and below	.05	.05375

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.06	.0625
63-66 octane	.05625	.05875
60 octane and below	.0525	.055
60-62 400 grades:		
72-74 octane (regular)	.06	.0625
63-66 octane	.05625	.05875
60 octane and below	.0525	.055

PENNSYLVANIA (inland refineries)—

74-76 octane (regular)	.0750	.0775
80 octane (1939 Research)		.0800

CALIFORNIA (domestic movement)—

58-60 400, 65 oct. and higher	.065	.0725
54-58 U. S. Motor	.055	.0625

EAST COAST (domestic)—

U. S. Motor (minimum 72 octane):		
New York (Bayonne)*	.08	.085
Philadelphia	.08	.0825
Boston		.085
Baltimore	.0775	.0825
Charleston, S. C.	.0725	.0775

*All grades of gasoline ½ to ¼ cent less for barge shipments. New York Harbor prices are for New York and New England delivery. Prices for New Jersey delivery ¼ cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
80 plus (research)	.06625	.0675
72-74 octane (leaded)	.0625	.06375
70-72 octane (unleaded)	.0625	.0650
68-70 octane (unleaded)	.0625	.0650

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.05125
Grade 18-55	.06125	.0625

NORTH TEXAS—

Grade 26-70		.0475
Grade 18-55	.05625	.0575

CALIFORNIA—

75-85 375-390	.045	.05

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70		.0475

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 i.b.p. 110-flash, 540-550 e.p.	.0375	.03875
41-43 gr., 300-320 i.b.p. 110-125 flash, 500-520 e.p.	.03875	.04
46-48 gr., 210-230 i.b.p. 480 max., e.p.	.04125	.0425

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

42-44	.0450	.0475
41-43	.04375	.04625

NORTH TEXAS—

41-43	.0425	.04625

NORTH LOUISIANA (Ark. and N. La. delivery)—

41-43	.04375	.04625

ARKANSAS (Ark. and N. La. del.)—

41-43	.04375	.04625

PENNSYLVANIA (inland refineries)—

46	.0625	.0650
45	.0625	.06375

CHICAGO (Based on Group 3)—

42-44	.0450	.0475
41-43	.04375	.04625

CALIFORNIA (Pac. Coast market)—

38-40 high-burning test	.045	.055

NEW YORK (Bayonne, N. J.)—

41-43		.053

GULF COAST (domestic)*—

41-43	.04	.04125

*Barge price ⅛ cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.04	.0425
No. 1 white (38-42)	.03875	.04125
No. 2 straw (32-36)	.03625	.03875
No. 3 zero to 10 (28-32)	.035	.0375

NORTH TEXAS—

No. 1 white (38-42)	.03825	.04125

NORTH LOUISIANA (Ark. and N. La. delivery)—

No. 2 (32-36)	.0325	.035

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36	.0325	.035

CHICAGO (Based on Group 3)—

Range oil	.04	.0425
No. 1 white (38-42)	.03875	.04125
No. 2 straw (32-36)	.03625	.03875
No. 3 zero to 10 (28-32)	.035	.0375

NEW YORK (Bayonne, N. J.)—

*No. 1		.053
*No. 2		.052
*No. 3		.052

*Barge deliveries ⅛ to ¼ cent under above tank-car price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

No. 5, low pour point (18-22)	.85	.90
No. 6, 15 and above (10-16)	.85	.90

NORTH TEXAS—

No. 5, low pour point (18-22)	.80	.85
No. 6, 15 and above (10-16)	.80	.85

NORTH LOUISIANA (Ark. and N. La. delivery)—

10-14 fuel oil, industrial	.80	.85

CHICAGO (Based on Group 3)—

No. 5, low pour point (18-22)	.85	.90
No. 5, 15 and above (18-22)	.85	.90
No. 6, low pour point (10-16)	.85	.90
No. 6, 15 and above (10-16)	.85	.90

PENNSYLVANIA (inland refineries)—

36-40	.055	.06

CALIFORNIA—

Los Angeles:

30-40 gas oil, per bbl.	1.10	1.25
24 plus diesel, per bbl.	1.10	1.25
24 plus diesel (bunkers)	1.20	1.35
12-16 (bunkers at tidewater)	.75	.85
10-16 (cargo lots)	.75	.85
12-17 (tank cars)	.65	.75
10-17 (high sulfur)	.55	.65

San Joaquin Valley:

10-18 (tank cars)	.70	.85
24 plus diesel, per bbl.	1.10	1.25

San Francisco:

24 plus diesel, per bbl.	1.35	1.40
24 plus diesel (bunkers)	1.40	1.50
10-16 (bunkers)	.80	.85

GULF COAST—

No. 2 fuel		.04
43-47 diesel		.04125
48-52 diesel	.04125	.0425
53-57 diesel		.0425
58-and-above diesel	.0425	.04375
Diesel bunkers		1.45
Bunker C (bulk cargoes)	.85	.90
Bunker C (bunkers)	.85	.90

NEW YORK (Bayonne, N. J.)—

27 plus gas oil		.053
28-30 diesel (lighterage 6¼c per bbl.)		2.15
28-30 diesel (tank cars)		.052
Bunker C (to ocean-going ships in N. Y. Harbor)	1.35	1.45
Industrial fuel (tank cars)		.044

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

200-210 D, 10-25		.27
150-160 D, 0-10		.23
150-160 D, 10-25		.225
120-125 D, 0-10		.225
120-125 D, 10-25		.22
Steam refined:		
600 dark green (untreated)		.145

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		.305
15 pour point		.295
25 pour point	.25	.28
Steam refined:		
600	.15	.16
650	.155	.165
600 flash	.16	.175
630 flash	.17	.18

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

0-10 pour point:		
150-3		.145
180-3		.15
200-3		.15
250-3		.165
280-3		.175
280-4		.17
300-3		.185
350-3½		.19
400-3½		.20
500-3½		.205
600-3½		.21
100-2½ paraffin oil 10-25		.0825
10-25 pour point:		
200-3		.145
250-3		.16
280-3		.17
280-4		.165

CALIFORNIA (moving to dom. mkt.)—

Pale oils:		
200-2½-3	.07	.0775
300-2½-3	.07	.0775
400-3-4	.0725	.08
450-3-4	.0725	.08
550-3-4	.0875	.1075
600-3-4	.0875	.11
Red oils:		
200-4-5	.07	.0775
300-5-6	.0725	.08
350-5-6	.09	.11
400-5-6	.09	.11
450-5-6	.09	.1125
500-5-6	.0925	.1125
600-5-6½	.0925	.1125
700-6½ plus	.0925	.1125
750-6½ plus	.0925	.1125
900-6½ plus	.0925	.1125

GULF COAST—

Pale oils:

100-3	.0625	.0650
200-3	.0850	.0875
300-3	.09	.0925
500-3½	.0975	.10
750-3½	.10	.1025
1,200-3½	.1025	.10375
2,000-4	.1050	.1075
3,000-4	.1225	.1250

PENNSYLVANIA—

150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pour point		.385
10 pour point		.375
15 pour point		.365
25 pour point		.31
200 vis., at 70° F., 3 color:		
Zero pour point		.405
10 pour point		.395
15 pour point		.385
25 pour point		.33

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (A.m.p.) w.c. scale		.06

PENNSYLVANIA (inland refineries)—

122-124 (A.m.p.) w.c. scale		.0625
124-126 (A.m.p.) w.c. scale		.0625

NEW YORK—

Wax in bags fully refined:		
125-127 (A.m.p.) wax	.0560	.0640
128-130 (A.m.p.) wax	.0560	.0660
130-132 (A.m.p.) wax		.0585
133-135 (A.m.p.) wax		.0615
135-137 (A.m.p.) wax		.0640
Crude scale:		
124-126 (A.m.p.) w.s.		.061
124-126 (A.m.p.) y.s.		.061
Petrolatum in barrels, carload lots:		
Dark green		.02875
Amber	.02875	.03125
Extra amber	.03125	.03375
Lily white	.04875	.05375
Snow white	.05625	.05750
Cream	.04125	.05250

Note: Most refiners are not quoting on wax pending interpretation of OPA order.

Export Prices

GASOLINE

GULF COAST—

60-62 400	.0550	.0675
61-63 390	.0575	.0650
64-66 375	.0575	.0650

LOS ANGELES—

U. S. Motor grades:		
Above 60 octane	.06	.0625
65-69 octane	.0575	.06
60-65 octane	.0525	.055

KEROSENE

GULF COAST—

41-43 water white	.0375	.04

LOS ANGELES—

41-43 water white	.05	.0525

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.a.s. in bbl.)—

Cylinder stocks:		
600 S. R. unfiltered		.265
630 S.R. unfiltered		.27
600 flash, S.R.		.265
650 flash, S.R.		.27
Bright stock:		
Light, 25 pour point	.36	.37

NEUTRAL OIL

200-3 color	.43	.50
150-3 color	.41	.46

PARAFFIN WAX

NEW YORK (prices per bbl.)—

123-125 A.m.p.	.0560	.0625
125-127 A.m.p.	.0560	.0625
128-130 A.m.p.	.0585	.0650
133-135 A.m.p.	.0615	.0700
135-137 A.m.p.	.0640	.0700
Crude scale:		
124-126 w.s.		.061
124-126 y.s.		.061

EQUIPMENT PROGRESS....

Giant Motors Will Power 1,250-Mile Pipe Line

Extending from Baton Rouge, La., to Greensboro, N. C., the new Plantation Pipe Line will be powered by 900-hp. Westinghouse explosion-resisting motors—the largest ever built. The pipe, for most of the distance 12 in. in diameter and changing to 10 in. at Bremen, Ga., will be able to deliver 90,000-bbl. a day—equivalent to about eight railroad trains of 50 tank cars each.

Increasing the present 60,000-bbl. capacity by 50 per cent involved some interesting engineering problems. High pump efficiency must be maintained both now and when the horsepower is increased by half, without the expense of changing motors.

The answer was found in an improved version of a 3,575-r.p.m., explosion-proof, squirrel-cage motor introduced by Westinghouse about 4 years ago for pipeline service. By anticipating the future need for power, at the time the motors were built, it will be possible by minor modifications to slip up the power output of the 450-hp. motor to 600 hp., and the 600-hp. one to 900 hp., with no sacrifice in performance Increased active iron and copper and the new high-temperature (Class B) insulation have their part in increasing motor capacity without change in frame size.

TRADE LITERATURE

THE MERIAM CO., 1955 West 112th Street, Cleveland, Ohio—Catalog No. C-10, which describes in compact form the company's line of U-type and well-type manometers, draft gages, flow meters, mercury pressure gages, tank gages and all accessories for accurately measuring pressures, vacuums and flows of liquids and gases. It is complete with illustrations and descriptions of the equipment.

BABCOCK & WILCOX TUBE CO., Beaver Falls, Pa.—Form TDC-102B, a new handy technical data card listing the latest creep-stress data available on B.&W. Croloys and other tubular materials for high-temperature service.

WESTINGHOUSE ELECTRIC & MANUFACTURING CO., Department 7-N-20, East Pittsburgh, Pa.—Folder F-8623, describing small motors from 1/6 to 1/2 hp., 145 frame size, for general use. Charts show motor characteristics plotting per cent synchronous speed against per cent full-load torque.

GARDNER-DENVER CO., Quincy, Ill.—A bulletin describing its new GarDurloy high-strength cast iron, which, according to the company, is a definite step forward in the manufacture of Gardner-Denver products.

BROWN INSTRUMENT CO., Wayne and Roberts Avenues, Philadelphia, Pa.—Catalog 8301, "Industrial Control Devices—Products of Minneapolis-Honeywell Regulator Company," which, with large, clear photographs, illustrates 44 industrial controls and safeguards such as temperature controllers, pressure controllers, humidity controllers, float switches, combustion safeguards, etc. Complete specifications and informative details are given for all types.

PRIMOID PRODUCTS CORP., 103 Park Avenue, New York, N. Y.—A new bulletin describing the various rubber-base compounds made by the company which are designed to stop leaks or seepage through brick, concrete, stucco or other types of masonry.

KOPPERS CO., tar and chemical division, Pittsburgh, Pa.—An 8-page folder which summarizes all of Koppers' important products, plants, and services. The list ranges from Koppers coals and coke to light-oil plants and purification systems; from valves, castings, forgings, couplings, and piston rings to roofing, tar-base paints, and pressure-treated timber products.

GENERAL ELECTRIC CO., Schenectady, N. Y.—Publication GED-972A. An 8-page booklet giving the complete story on Thy-mo-trol, the new G-E electronic control system for the operation of direct-current motors from alternating-current lines. Containing photographs, a simplified chart, and diagrams, the publication tells how the Thy-mo-trol system not only provides stepless, wide-range speed control, but also performs the additional functions of starting, accelerating, protecting, and stopping direct-current motors.

GENERAL ELECTRIC CO., Schenectady, N. Y.—Publication GEA-3649, describing the new metal-clad switchgear for oil refineries. The new vertical-lift switchgear is especially made for installations where it may be subject to corrosive and hazardous atmospheres.

JONES & LAUGHLIN STEEL CORP., Pittsburgh, Pa.—A new booklet on J. & L. Permalined steel pipe, an inexpensive corrosion-resisting pipe recommended for a wide variety of uses. Manufacture and advantages of the product are described.

JONES & LAUGHLIN STEEL CORP., Pittsburgh, Pa.—Bulletin OC-4, a pocket-sized booklet on Jones & Laughlin tubular products for the oil industry. It includes designing data for oil-well casing and tubing and a description of manufacturing processes as well as a number of handy reference tables.

UNITED STATES RUBBER CO., Rockefeller Center, N. Y.—A new hose manual entitled "Eight Plies of Useful Hose Information," issued by the mechanical goods division. The book is in the form of an enlarged section of hose, with each page representing one ply. The following products are shown by cut-away sectional drawings: Steam hose, water hose, suction hose, air hose, and oil and gasoline hose. In addition, each page carries a helpful hose hint such as "Be sure that your receiving department is instructed to use care in unpacking rubber hose; grab hooks, knives, sharp tools, and chains often ruin hose before it goes into service."

DOWNINGTON MANUFACTURING CO., Huber pump division, Downington, Pa.—A folder describing the squeegee principle of the Downington-Huber squeegee type pump which offers complete rubber protection against corrosion.

BAKER OIL TOOLS, INC., P.O. Box 3048, Houston, Tex.—A folder describing the operating principle of the Baker Model "B" casing centralizer which affords new important advantages for operators who desire to effectively center casing strings.

PERMUTIT CO., 330 West Forty-second Street, New York, N. Y.—"Supplementary Treatment of Boiler Feedwater," a booklet which presents a complete discussion of the various ways in which a plant might feed chemicals to further condition the water after external water treatment in its boiler operation.

Five Aluminum-Substitute Paints Offered by American-Marietta

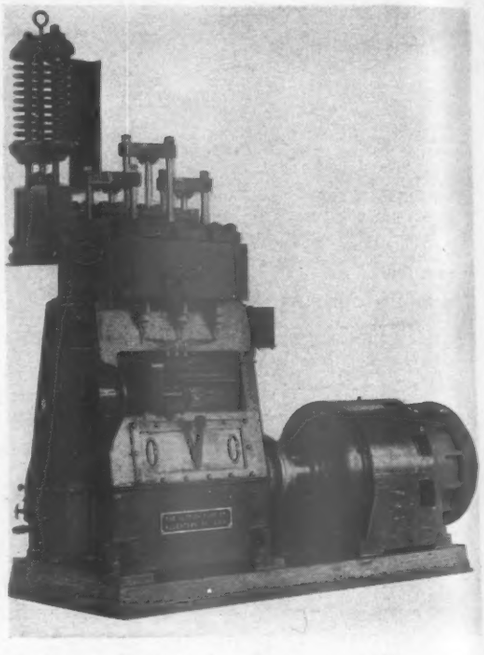
A line of five new paints, designed to provide the oil industry and other civilian markets with products to replace now unavailable aluminum paints, has been announced by American-Marietta company, 43 East Ohio Street, Chicago. Introduced as members of the company's "Defense Line," they may be applied by brushing or spraying.

Valdura tank white has been introduced to replace aluminum paint in applications where it is desirable to cut evaporation losses and to reduce inside temperatures. Valdura metal lead paint provides a fine protective, lead-colored metal coating for all metal surfaces, including new or old galvanized metal.

Two Valdura defense grays, available in light and neutral shades, are designed to provide low-cost effective protection and long durability on exposed metal surfaces Valdura enamelized yellow metal primer is designed for all types of metal surfaces, particularly where metal is subjected to extremely damp, wet and foggy conditions.

Aldrich Develops New Line Of Vertical Triplex Pumps

A new line of high-pressure vertical triplex constant-stroke pumps has been developed by the Aldrich Pump Co., Allentown, Pa. The pumps are of various sizes



from 10 to 150 hp. for pressures up to 9,800 lb. per sq. in. and capacities up to 220 g.p.m.

Improved design of this new pump makes it particularly applicable to gear-head motor or speed-reducer drive. Provision has also been made in the larger sizes for the use of built-in gearing, or belt drive direct to crankshaft.

These pumps can be fitted with Aldrich patented synchronized suction-valve control, as shown, for services such as central hydraulic accumulator systems where several presses are in constant operation. For special-process work at the high pressures encountered in oil refining and the chemical industry, the outboard plungers are sealed dust and weathertight with a removable cover. Many new features and refinements over and above usual pump design contribute to the high mechanical efficiency of this new line of pumps.

New Indicator Tells Contents Of a Drum at a Glance

The U-C level indicator, offered by U-C Level Indicator Sales, Division of Marketing, Inc., 828 North Broadway, Milwaukee, Wis., is a modern means of checking, at a glance, the contents of various drums of oil, solvents or other liquids. The U-C indicator is placed at the faucet in such a position that anyone drawing out some of the contents of the drum must look at it and can see the dial quickly.

The U-C indicator consists of a cork float mounted on wire rods, the level of which is indicated on a gage. The gage is installed on the external fitting which, in turn, is fashioned to receive the user's faucet or spigot.

It has already been purchased by a number of large United States firms and the Navy Department and inquiries have been received from Brazil, El Salvador and other nations.

Lincoln Arc Welder Control Eliminates Need for Meter

Improved and simplified design of its exclusive system of dual continuous control for arc welding machines which eliminates the need for meters showing volts and amperes has been announced by the Lincoln Electric Co., Cleveland, Ohio.

This new welding facility has been in engineering design development and preliminary production lineup for some time and is said to be achieved as a result of the accuracy possible in current adjustments with dual continuous control in conjunction with Lincoln's self-indicating preset dials.

These welders have both job selector and current control calibrated and equipment with dials which indicate the type of work and the number of amperes for each and every setting. It is claimed that this feature enables the welding operator to secure highest quality welds and highest possible welding speeds because he can vary both the slope of the volt-ampere curve and the amount of welding current independently and positively to suit every job encountered.

Another feature of this welder control is that both voltage control (job selector) and current control are continuous in operation. This design provides literally thousands of possible combinations of voltage and current. It is claimed that this simplifies the setting of the control and accounts for an exceptionally wide welding range as to types of work, welding conditions, sizes of electrodes and thicknesses of material.

Being continuous, the control can be advanced or retarded in increments as fine as desired.

Advantages of the new development, as emphasized by the manufacturer, include (1) ability to set and read the current from the dial; (2) elimination of trouble and expense resulting from meter breakage; (3) elimination of meter inaccuracy after a few months service in the field; (4) availability of positive polarity reversal; and, (5) ability to quickly verify polarity by noting position of switch handle.

Armstrong Introduces Fibrated Leather Gasket Material

A new fibrated leather gasket material, having the natural advantages of leather in addition to those of a manufactured product, including quality control and uniformity, and extra-large sheets or rolls, has been introduced by the industrial division of the Armstrong Cork Co., Lancaster, Pa.

Known as Armstrong's No. 841, this material is recommended for sealing oil, water, or gasoline, and for other general gasketing purposes wherever temperatures do not exceed 300° F. and where acids or alkalis are not encountered.

Tough and tear-resistant, this material is supplied in rolls and sheets in standard widths up to 48 in. and is also available in shapes die-cut to specifications. It is compressible, has a high percentage of recovery, and takes a minimum amount of permanent set.

This product is impervious to oil, water, gasoline, and other liquids. In addition, it is subject to a minimum of dimensional or other physical changes due to moisture, dryness, or temperature variations.

New Buda Personnel Director Has Had Wide Experience

A. A. Gustafson has recently been appointed director of personnel and safety of the Buda Co. in Harvey, Ill. He is a graduate mechanical engineer from Purdue University. He has had 15 years practical experience with manufacturing concerns in the Chicago area, namely, with the Anderson Co. of Gary, Ind.; Hubbard Steel Foundry Co. of East Chicago, Ind.; B. F. Gump Co. of Chicago, and Schwietzer-Conrad Co. of Chicago.

For the last year and a half he was employed by the United States Government as a safety engineer where he successfully organized and directed safety division for one of the federal government departments in the State of Illinois. His engineering background, personnel work, safety experience and training make him well qualified to handle the personnel work for the Buda Co.

Barrett Company Consolidated With Allied Chemical

Effective December 1, the Barrett Co., 40 Rector Street, New York, N. Y., has been consolidated with its parent company, Allied Chemical & Dye Corp., and hereafter its business will be conducted under the above title. All contracts will be performed by the successor company, and except for the change in name, operations will be conducted as heretofore by the same personnel.

Heat and Power Authority Joins Chemical Construction

Chemical Construction Corp., 30 Rockefeller Plaza, New York, N. Y., designers and builders of complete plans for the production and recovery of acids and the manufacture of various chemicals, announces the appointment of Dr. Charles E. Lucke as consultant in their extensive work for the defense program.

Dr. Lucke, who retired this year from his long-held post as head of the department of mechanical engineering at Columbia University, is widely known as one of the country's outstanding authorities on heat and power. During World War I, he served as a commander of the U.S.N.R.F., and later held important advisory positions with prominent industrial concerns, including Worthington Pump & Machinery Corp. and the Babcock & Wilcox Co.

In his association with Chemical Construction Corp., Dr. Lucke will act as consultant in the selection and installation of power generating and mechanical equipment for the large projects on which the corporation is engaged. While maintaining his connection with Columbia University as Stevens Professor-Emeritus of mechanical engineering, Dr. Lucke will devote most of his time to his work for Chemical Construction Corp.

New Advertising Manager Named by Chicago Pneumatic

Promotion of Joseph A. Sullivan, assistant publicity manaager of Chicago Pneumatic Tool Co., to advertising manager is announced today by Leslie S. Gillette, sales development manager. The advertising department is located in the company headquarters at 6 East Forty-Fourth Street, New York, N. Y.

Joining the Chicago Pneumatic organization in 1928, Mr. Sullivan served until 1932 as head of the direct-mail division of the company's publicity department. From 1932 until 1935, Mr. Sullivan was with Sweet's Catalog Service division of the F. W. Dodge Corp. as copy chief. In 1935, Mr. Sullivan rejoined Chicago Pneumatic as assistant publicity manager, responsible for the creation and production of all sales literature pertaining to the company's diversified line of products.

Previous to his association with Chicago Pneumatic and F. W. Dodge Corp., Mr. Sullivan was assistant advertising manager of Columbia Phonograph Corp. and copywriter with the Blow Co., advertising agents.

The promotion of E. R. Goss to branch manager of the El Paso, Tex., branch office was also announced by the company. Mr. Goss succeeds E. J. Coughlin, former manager of the branch, who was killed in an automobile accident on October 14.

AMONG EQUIPMENT MEN...

T. I. Phillips Elected Vice President of Westinghouse

Election of T. I. Phillips as a vice president of the Westinghouse Electric & Manufacturing Co. was announced after a recent board meeting by A. W. Robertson, chairman. Mr. Phillips started with the company as a tool maker in 1915 and has been assistant to the president of the company since February 14 of this year.

T. I. PHILLIPS

A native of London, England, Mr. Phillips was educated in public schools of Lynn, Mass., attended evening school and took a course of apprentice training to fit himself for the job of tool maker. Within a year after joining the company, Mr. Phillips was made a foreman.

In 1930, Mr. Phillips was appointed manager of the works department at the Nuttall plant of the company, where he equipped the gearing department with improved and highly accurate machines. Three years later he was made works manager for the company, to serve as control authority for all manufacturing operation.

The board of directors in 1937 awarded him the Order of Merit, a means of recognition for special accomplishment. With it went a large bronze medal and a citation for his broad understanding of the technical and human problems of management; for his wisdom in matters of employe relationship; and for his keen sense of justice and his thorough understanding of manufacturing technique.

C. M. Daniel Joins LaPlant-Choate Sales Force

Most recent addition to the sales department of the LaPlant-Choate Manufacturing Co., Inc., is C. M. Daniel, who will assist in the sales work at the company office in Cedar Rapids, Iowa.

Mr. Daniel has been sales promotion manager for the International Harvester Co. at its Terre Haute, Ind., branch, and for several years prior to that was connected with the Davenport, Iowa, branch in the motor-truck, industrial, and farm-equipment divisions.

He attended Iowa State College at Ames for 2 years and graduated from Coe College at Cedar Rapids, having majored in engineering and social sciences. He will make his home in Cedar Rapids.

John A. Roebling's Sons Cleveland Branch Gets New Manager

The John A. Roebling's Sons Co. announced the retirement of Raymond R. Newell as manager of its Cleveland branch December 1. Mr. Newell had been associated with the Roebling company for 39 years and had been in charge of the Cleveland organization since 1911.

EUGENE KING

Eugene King, former assistant manager under Mr. Newell, has been appointed to the managership. Mr. King was first employed by the Roebling company in 1917 and in 1926 he became salesman in charge of the Detroit area. In 1932 he was moved to northern Ohio; from 1933 until July 1, 1941, he covered the ore-loading, dredging, excavating, steel, and rubber industries of the Akron district.

On July 1, 1941, he was appointed assistant manager of the Cleveland branch.

CLASSIFIED ADVERTISING

THE MARKET PLACE OF THE OIL INDUSTRY . . .

Patent Attorneys

PATENTS — TRADE MARKS

All cases submitted given personal attention.

Form "Evidence of Conception" with instructions for use and "Schedule of Government and Attorney's Fees"—FREE.

LANCASTER, ALLWINE & ROMMEL
Patent Law Offices
618 Bowen Bldg., Washington, D. C.

Leases and Drilling Blocks

LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little Rock, Ark.

LEASES ROYALTIES
PRODUCING OR NONPRODUCING
Texas, New Mexico, Oklahoma, Louisiana and Illinois
20 Years Experience
Inquiries Invited

B. D. BUCKLEY
Paul Brown Bldg., St. Louis, Mo.

THE
OIL PROPERTIES EXCHANGE
For Sale: Many Producing Oil Properties, Royalties, Drilling Blocks, and Oil Investments of various sizes in Mid-Continent area. Contact us to Buy or Sell properties.
Alexander Bldg., Tulsa, Okla.

CHEAP CRANE COUNTY Sec. 18, B28, under Magnolia-Stanolind leases. Jefferson G. Smith, 215 Littlefield Bldg., Austin, Tex.

OIL LEASE: Have 125 acres Woodson County, Kansas, oil lease. 80 acres will produce—field bounded. Three producing gas wells in Bartlesville at 1162. Top of Mississippi Lime at 1200', oil at 1205'. 1 drilled into this strata and produced oil. Have drilling machine on lease, tubing, casing, oil tanks, gun barrel, etc. If you can match up my investment you can have 50%. Write for full details. E. B. Jaeger, 3702 W. 3rd St., Los Angeles, Calif.

BLOCK of leases in Southwestern Oklahoma. Open for deal with parties able to drill well for acreage. Good geology. Write Philo Dempsey, Roosevelt, Okla.

UNCOMPLETED Wildcat Well near Dierks, Ark. Depth 1410 feet, 8000 acre block. Shut down for lack of funds. Write J. C. H., Box 74, Dierks, Ark.

TWO WELLS, 15 barrels settled production, $11,000. Material salvage value over $6,000. Box 345, Shawnee, Okla. Phone 3223-W. No brokers.

HAVE BLOCKED 25,000 acres on definite closed structure in Powder River Basin and need capital to further geologize and develop. Write or wire P. O. Box 1162, Casper, Wyoming.

I KNOW acreage in Western Kans. on good Geology. Open for development. Can furnish drilling Block to Parties who mean Business. Also have for sale interest in acreage to be drilled soon offsetting Production; and some good Royalties. Can furnish satisfactory references. H. R. OWENS, Utica, Kans.

FOR LEASE: 160 acres, southwestern Tyler County. Mrs. L. E. Vanvalkenburgh, 429 Heights Blvd., Houston, Texas.

FOR SALE: Oil and gas leases, small production, drilling propositions, fluorspar and rock asphalt deposits. Reports and maps furnished on request. W. P. Harley, Bowling Green, Ky.

Legal Blanks

BURKHART'S legal blanks and general forms serving Mid-Cont. oil field since 1908—Okla. Kans. N. Mex. Tex. Ala. Ark. Fla. Ga. Ill. Ind. Ky. La. Mich. Miss. Mo. Neb. N. Dak. Tenn. Wyo. Free catalog samples on request. Burkhart Ptg. & Sta. Co., 115 S. Cinn., Tulsa, Oklahoma.

Royalties

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma

WE BUY & SELL all types of Oil and Gas Royalties. Sales restricted to registered dealers only. Grimes Royalty Co., National Mutual Bldg., Tulsa, Okla.

DEEDED ROYALTIES
State Oil & Gas Leases
Harry S. Wright, Farmington, N. M.
REGISTERED ROYALTY DEALER

FOR SALE: Royalty in N.W. ¼ Sec. 10-14n-3w. Surface also. Mary F. Williams, 320 E. Main, Edmond, Okla.

Business Opportunity

A LUBRICATING Oil and Grease business made 40% on selling price first nine months this year; will take $50,000 cash to handle. No debts. 10 year established business. Box A-742, The Oil and Gas Journal, Tulsa, Oklahoma.

FOR SALE OR TRADE—One Refinery in the heart of Kansas oil field. Trade for Ranch or sell for cash. Box A-753, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE
Revolutionary new lubricant for rubber parts of automobiles, fan belts, doors and a penetrant. Process license or in bulk. Crowe Chemical Co., 533 Mayo Bldg., Tulsa, Okla.

CRUDE Oil, Producing Leases and Royalties bought and loaned on. R. A. Bass, Bristol Hotel, Houston, Texas.

Incorporation

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

CAPITAL SEEKERS
Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

Ranches—Farm Lands

BUY RANCH LAND under oil development. Leased for drilling, returns ⅛ royalty. 20 acres $135 or 40 acres $250. Full details furnished. Write Box A-734, The Oil and Gas Journal, Tulsa, Okla.

Help Wanted

ENGINEER WANTED in central states refinery. Must be a college graduate in engineering and experienced in design and erection of petroleum refining constructions. Box A-731, The Oil and Gas Journal, Tulsa, Okla.

HELP WANTED
Instrument Engineer wanted for responsible position in oil refinery application work. Preferably qualified to analyze control problem from engineering flow plan, determine loads and pressure drops from process data, select proper equipment and specify for purchase. Knowledge of Foxboro, L.&N., Brown, Mason-Neilan and Taylor controls essential. Age approximately 26-30. Engineering degree required. Location New York City. Employment permanent. Advancement pending ability. Pay $250-$300 per month. Address reply to Box A-783, The Oil and Gas Journal, Tulsa, Okla.

Situations Wanted

REFINERY and ASPHALT TECHNOLOGIST: 20 yrs. exp. in research, process development, by-product utilization, lube and asphalt improvers, as well as actual manufacture of petroleum products seeks responsible position. Creative and executive ability. Consider supervision of manufacture, development work, chief chemist, refinery supt., or technical sales. Excellent references. Box A-782, The Oil and Gas Journal, Tulsa, Okla.

PETROLEUM ENGINEER, 29, Married, graduate of accredited Petroleum Engineering School, and Licensed Professional Engineer. Seven years' experience in drilling and production with major company. Desires permanent position as Petroleum Engineer, drilling or Production Superintendent. Box A-741, The Oil and Gas Journal, Tulsa, Okla.

Financing

LOANS made on producing oil, gas and mineral lands. New York Note & Share Corp., 109 Broad St., New York City.

Equipment Wanted

WANTED: One Horizontal Steel Tank 12' x 36' or Equal Capacity, ⅜" Plate. Box A-781, The Oil and Gas Journal, Tulsa, Okla.

TANK CARS
Regardless of condition
Get up on present prices!
This may be the time to liquidate them!
Quotations cheerfully made without obligation
IRON & STEEL PRODUCTS, INC.
13412 S. Brainard Ave., Chicago, Ill.
"ANYTHING containing IRON or STEEL"

For Sale—Equipment

FOR SALE: Direct to operators for cash. No brokers. Casing, line pipe, fittings, tubing, rods, tanks, pull machines, powers, service masts, engines. C. T. Boone, Emporia, Kansas.

MATERIAL—STOCK—AIR PLANT
Priced to sell—all or any part
1—Take off Pulley Miller Gas Engine to Overhead Line Shaft
1—165 HP Miller Gas Engine
1—Burt-Cross Air Filter
1—2½" x 14' Overhead Line Shaft Comp.
1—5½" x 2½" Air Tank
1—Wakesha Motor Radiator Frame
1—"10" Ingersoll-Rand Compressor
1—Manzel Lubricator
2—Blaw-Knox Tracifiers 3"
2—10½ x 4¾ x 12 Worthington Compressors.
2—Manzel Lubricators
1—Air Pump
1—5' x 5' Scrubber Tank
1—2" Nelan-Sch Gas Regulator
1—2" CF HP Gas Regulator
2—2' x 5' Making Tanks
1—80' x 30' Steel Frame Building.
Located Seminole, Okla.
BOGE IRON & METAL CO.
800 S. St. Francis Ave., Wichita, Kansas

1—Condenser Box 24-0 x 10-0 x 6-0.
1—Condenser Box 30-0 x 8-0 x 5-0.
3—Condenser Boxes 30-0 x 10-0 x 5-0.
2—Tank Car Shells, 25-7 x 6-8, ¼" steel, 6500 gal. cap.
6—Tank Car Shells 25-6 x 6-8, ¼" steel, 6500 gal. cap.
Phone—Wire—Write
BROWN-STRAUSS CORPORATION
212 Colcord Bldg.
Oklahoma City, Oklahoma

3—Ingersoll-Rand High Pressure Compressors size 7¼" x 20". Attachments for Oil and Gas Horizontal Engines. Compressors are new, have never been used. Price $200.00 each.
1—Easton Cole & Burnham Pipe Machine, cuts 2½" to 8", 3 sets dies, Belt Drive. Price $500.00.
1—Oster, cuts 2½" to 8"; Price $250.00.
1—Oster, cuts ½" to 2". Price $100.00.
1—Jarecki, cuts ½" to 2". Price $125.00.
J. O. GRIFFIN COMPANY
2030 W. Main St., Springfield, Ohio.

PIPELINE EQUIPMENT
1—5"-7" x 10" KMS Worthington Power Pump with GAK Waukesha Engine complete with V-Belt Drive, on Steel Skids.
2—5" x 6" Gaso Power Pumps with Model 217 Buda Engines complete with V-Belt Drives, on Steel Skids.
4—3" Worthington Rotary Pumps with Model XAHU Waukesha or Model OOC Hercules Engines complete with Fast's Couplings, on Steel Skids.
1—4" Worthington Rotary Pump with Model OOC Hercules Engine complete with Fast's Coupling, on Steel Skids.
2—2½" Worthington Rotary Pumps with Model 217 Buda or Model XAHU Waukesha Engines complete with Fast's Couplings, on Steel Skids.
10,000 feet Secondhand 3" 11½ thread line pipe.
1—2200 barrel Riveted Steel Tank with stairway.
Lot 3", 4" and 6" connections up to 500 lb. test.
Located at Lisbon, Louisiana.
Telephone 2-8757, or write—
Room 304, First National Bank Building, Shreveport, Louisiana.

FOR SALE: 6 x 16 Wilson-Snyder Power Slush Pump. Melton Supply Co., Seminole, Okla.

4,000 FT. practically new 2⅞" Hydril drill pipe. All or part. Box A-780, The Oil and Gas Journal, Tulsa, Okla.

LATHE—14' x 24 to 30" swing. Electric motor, counter shaft, and all attachments included. M. B. Jensen, 3502 S. Peoria, Tulsa, Okla.

FOR SALE: 125 H.P. 200 W.P. Brocerick Boiler, Code Condition, $975. Melton Supply Co., Seminole, Okla.

CLASSIFIED ADVERTISING RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a words each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.55	$3.30
4 Lines	1.40	2.40	3.40	4.40
5 Lines	1.75	3.00	4.25	5.50
6 Lines	2.10	3.60	5.10	6.60
7 Lines	$2.45	$4.20	$5.95	$7.70
8 Lines	2.80	4.80	6.80	8.80
9 Lines	3.15	5.40	7.65	9.90
10 Lines	3.50	6.00	8.50	11.00

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Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	1 time	$5.00
1 Inch	13 times	4.50 per inch
1 Inch	26 times	4.00 per inch
1 Inch	52 times	3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma